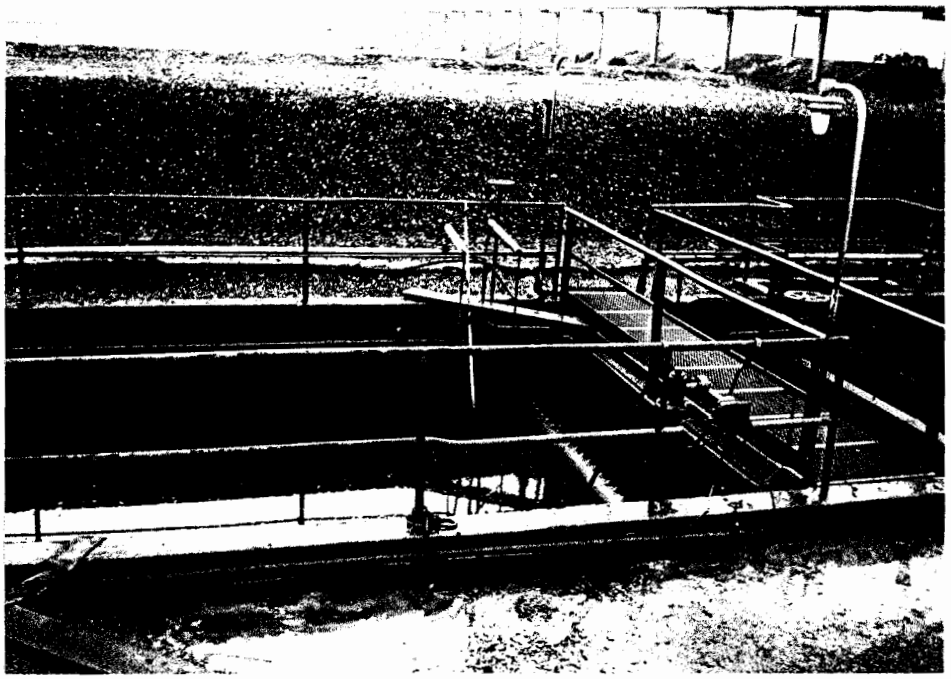
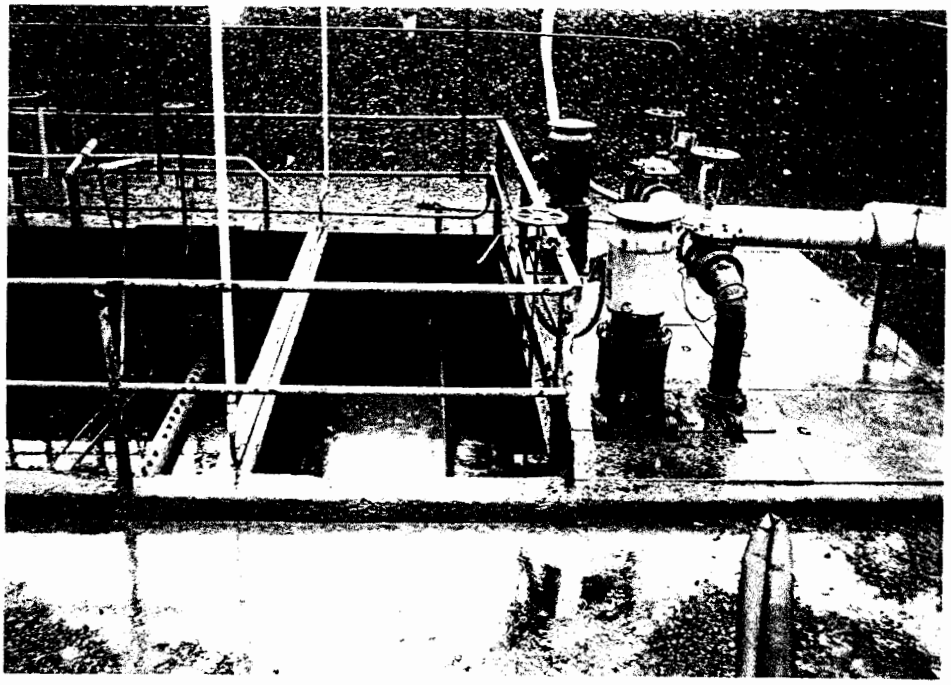
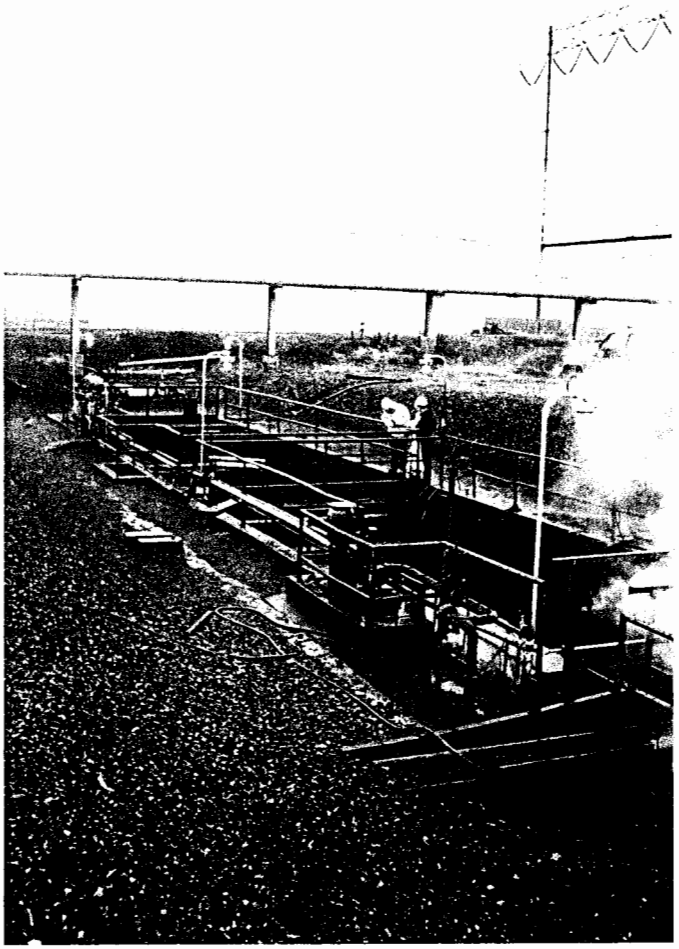


63.1 1A Oil/Water Separator. View facing east toward the middle section of the separator. Note the oily accumulation on the soil around the unit.



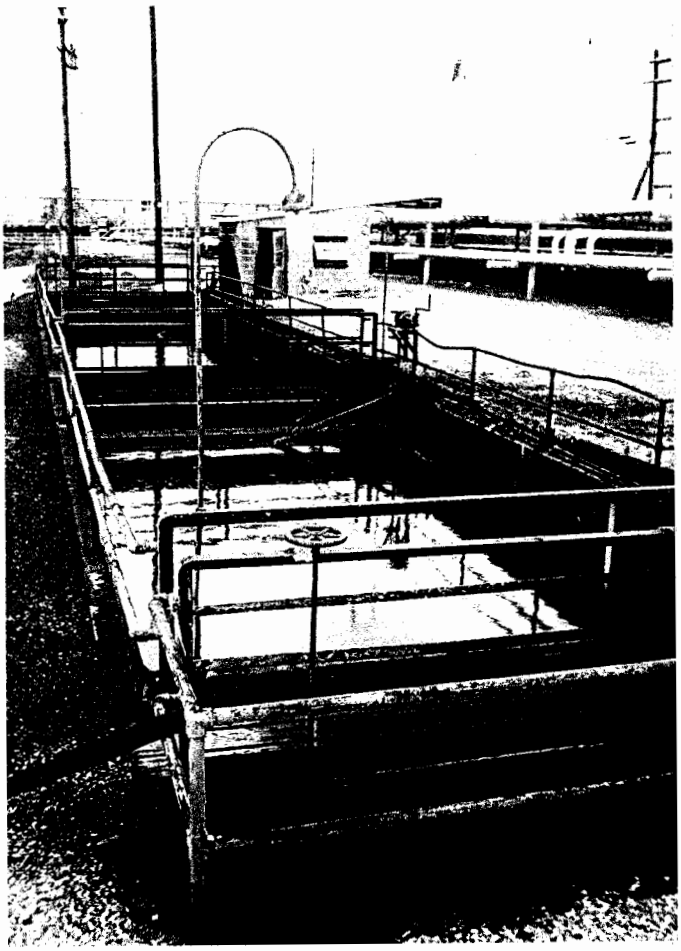
63.2 1A Oil/Water Separator. View facing northeast toward the weir and pump for the separator. Note the heavy oil accumulation on the soil around the unit.

63.3 1A Oil/Water Separator. View facing northwest along the southwest side of the separator. Note the stain line along the bottom of the gravel containment wall to the left of the unit.

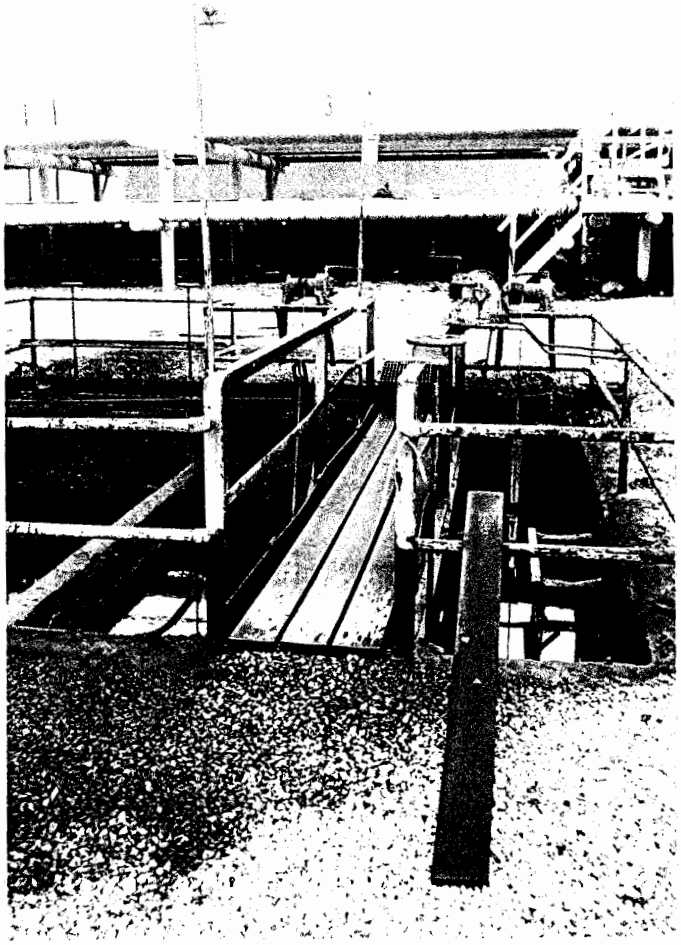


63.4 1A Oil/Water Separator. Overview facing south toward the separator.

64.0 1B Oil/Water Separator. No Photograph.

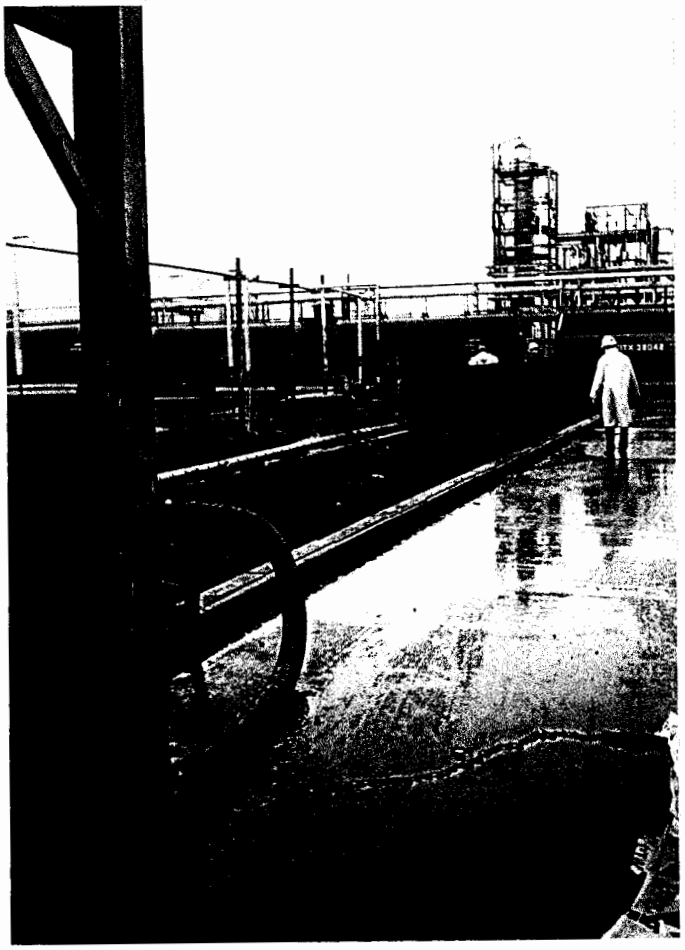


65.1 1C Oil/Water Separator. View facing south. Note the heavy staining on the unit and surrounding areas.



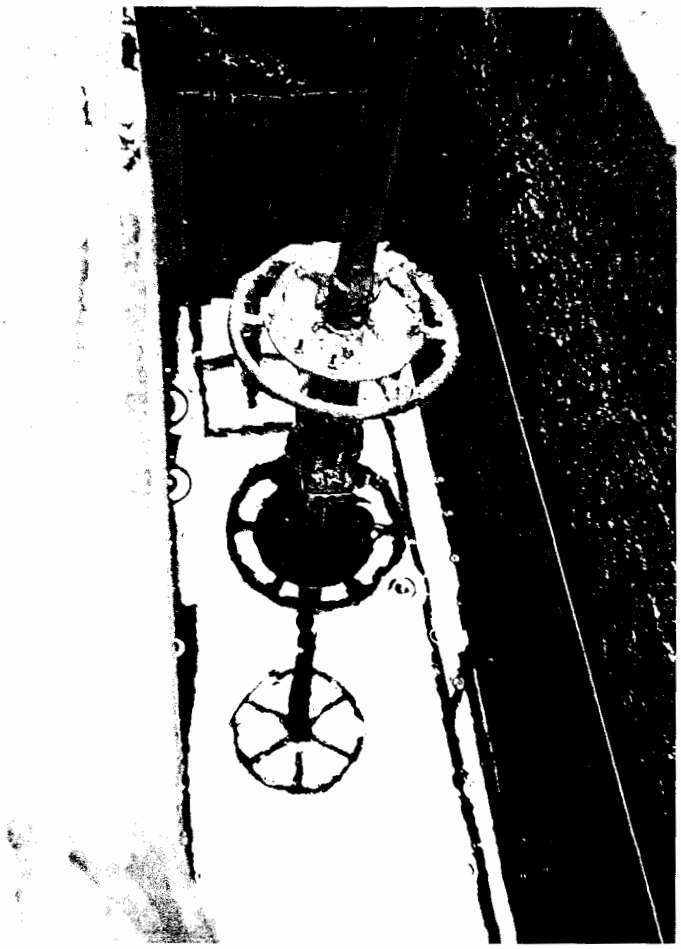
65.2 1C Oil/Water Separator. View facing west of the sump at the north end of the separator. Note the oily residue accumulation.

65.3 1C Oil/Water Separator. View facing west toward the skimmer at the south end of the separator. Note the condition of the unit and the oil on the water.

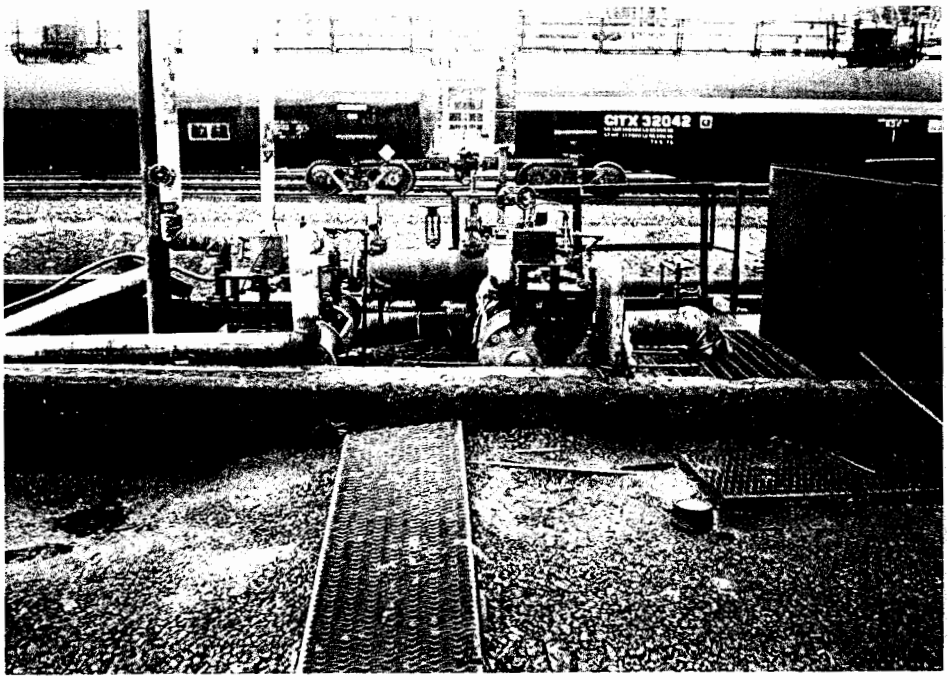


66.1 1D Oil/Water Separator. View facing south. Discharge is to the south to the Middle Creek Surface Drainage System (SWMU 96). Middle Creek is just in front of the railroad tank cars in the photograph.

66.2 1D Oil/Water Separator. Close-up view of strainer at the north end of the separator. Note the oil saturated condition of the debris collected in the screen area.



66.3 1D Oil/Water Separator. Close-up view of valve and valve box for the separator. Note the heavy oily accumulation of material.

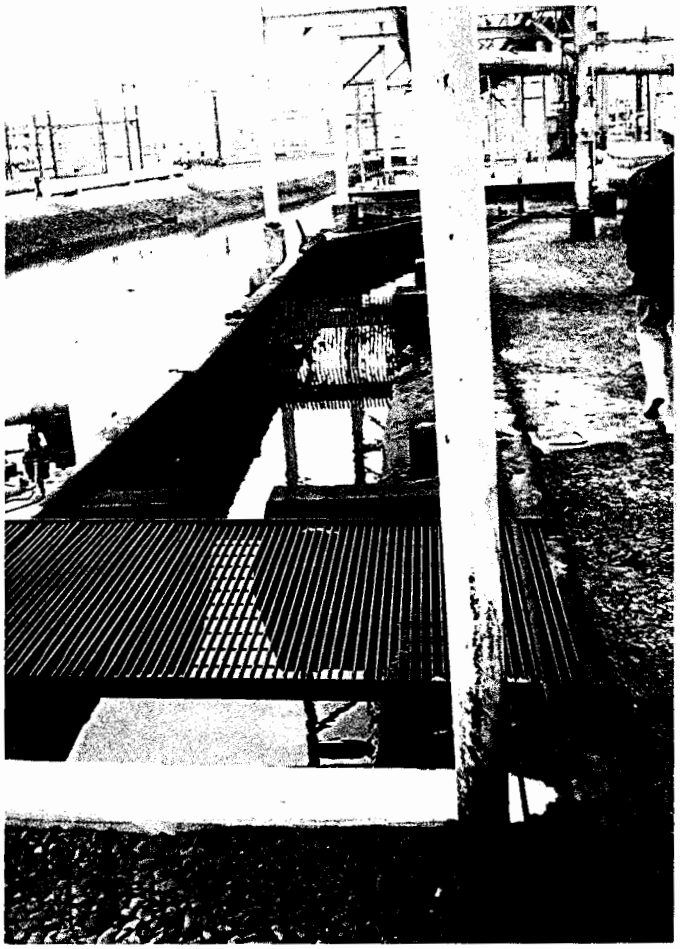


66.4 1D Oil/Water Separator. View facing south toward the pump system for the separator. Note the heavy oil accumulation.

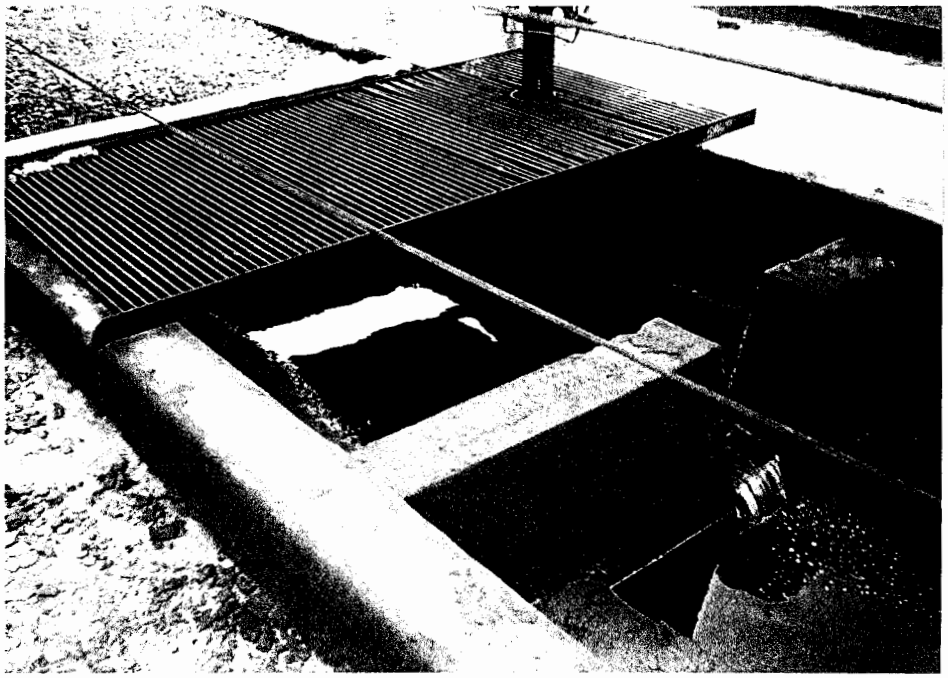
67.0 1E Oil/Water Separator. No Photograph.

68.1 1F Oil/Water Separator and 1F Oil/Water Separator Electrical
G.1 Box. View facing east. The separator system involves the valves and pumps in the photograph. The fenced concrete box is the 1F Oil/Water Separator Electrical Box (AOC G).

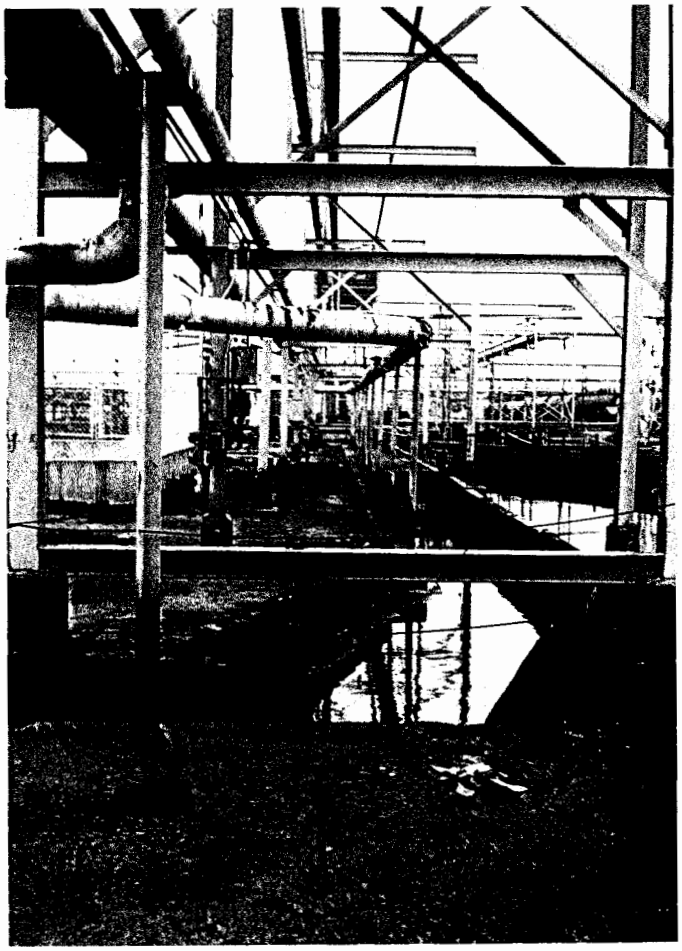
68.2 1F Oil/Water Separator. View looking down at the weir mechanism for the unit.



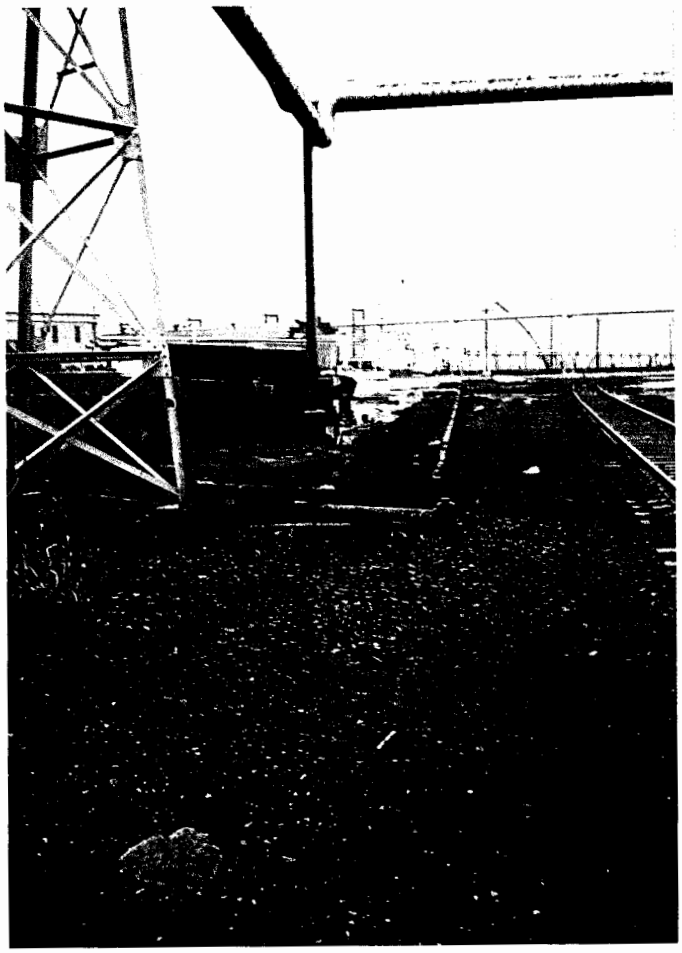
69.1 1F Oil/Water Separator Feed Trench. View facing west toward the open end of the feed trench near the weir.



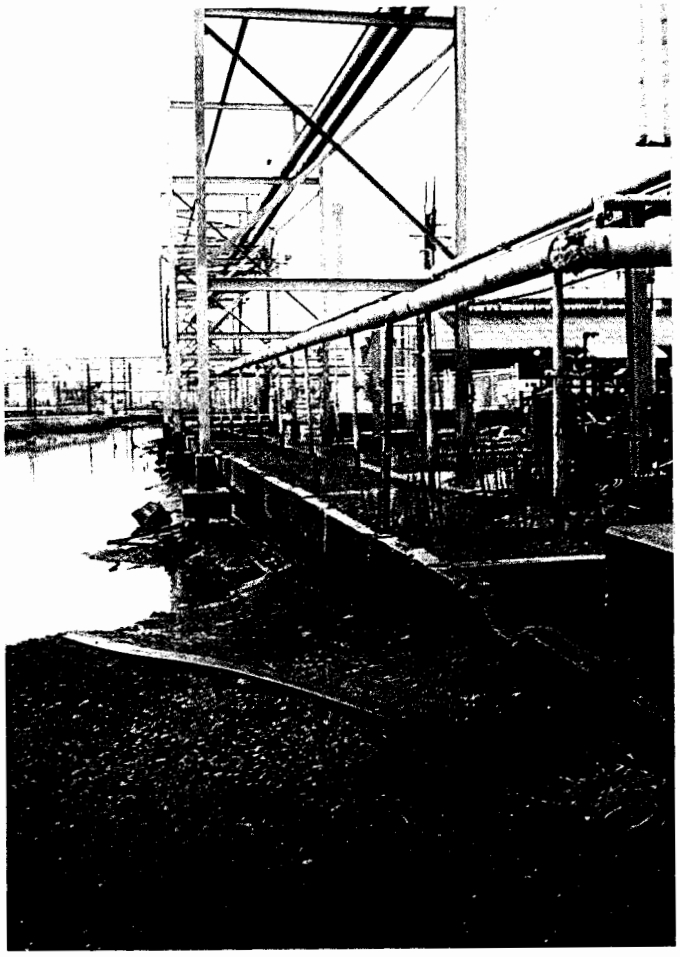
69.2 1F Oil/Water Separator Feed Trench. Close-up view facing east toward the weir in feed trench. Note the oil accumulation surrounding the unit.



69.3 1F Oil/Water Separator Feed Trench. View facing east. The Middle Creek Surface Drainage System (SWMU 96) is visible to the right of the feed trench.

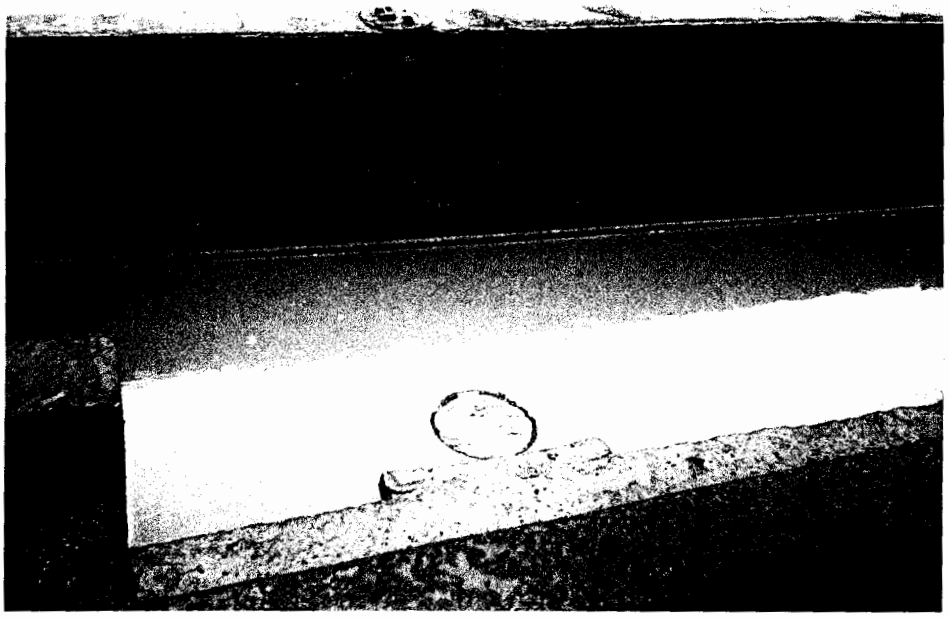


69.4 1F Oil/Water Separator Feed Trench. View facing northeast in the area of the underground pipe line which feeds into the feed trench for the 1F Oil/Water Separator (SWMU 68). The pipe line runs parallel to the railroad tracks.

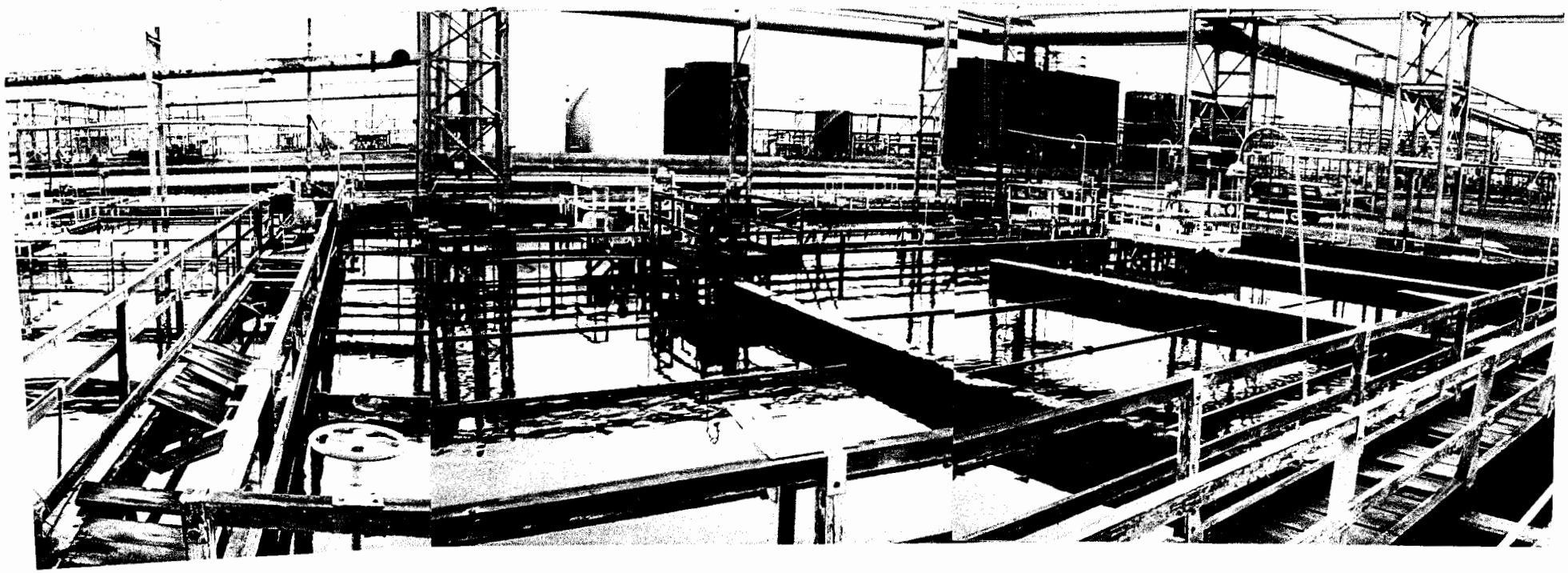


69.5 1F Oil/Water Separator Feed Trench. View facing northwest. The concrete area has an underground pipe which leads east to an open trench (dark stained area to the right). The Middle Creek Surface Drainage System (SWMU 96) is visible to the left in the photograph.

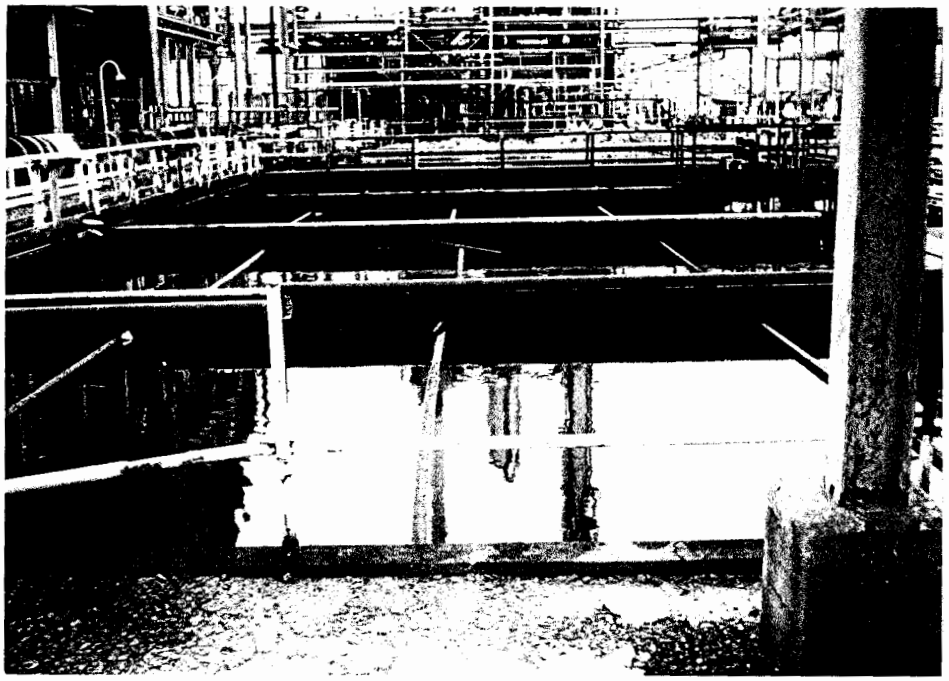
69.6 1F Oil/Water Separator Feed Trench. View facing south toward an associated sump at the east end of the feed trench. Note the cracks in the concrete walls of the unit and the heavy oily residue accumulation.



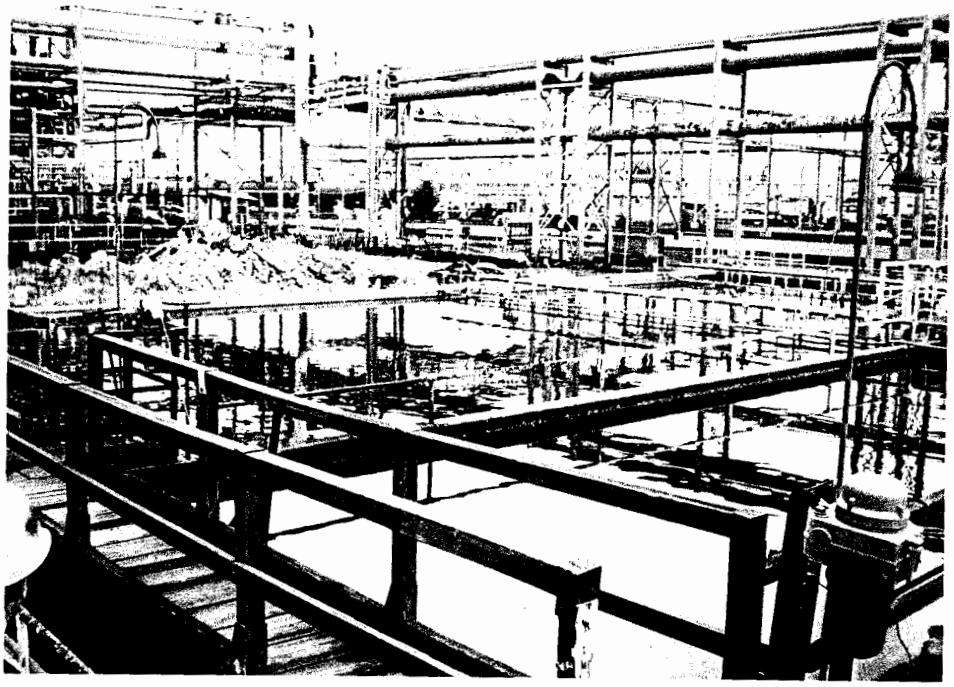
69.7 1F Oil/Water Separator Feed Trench. View facing south toward the inlet from the feed trench to the 1F Oil/Water Separator (SWMU 68).



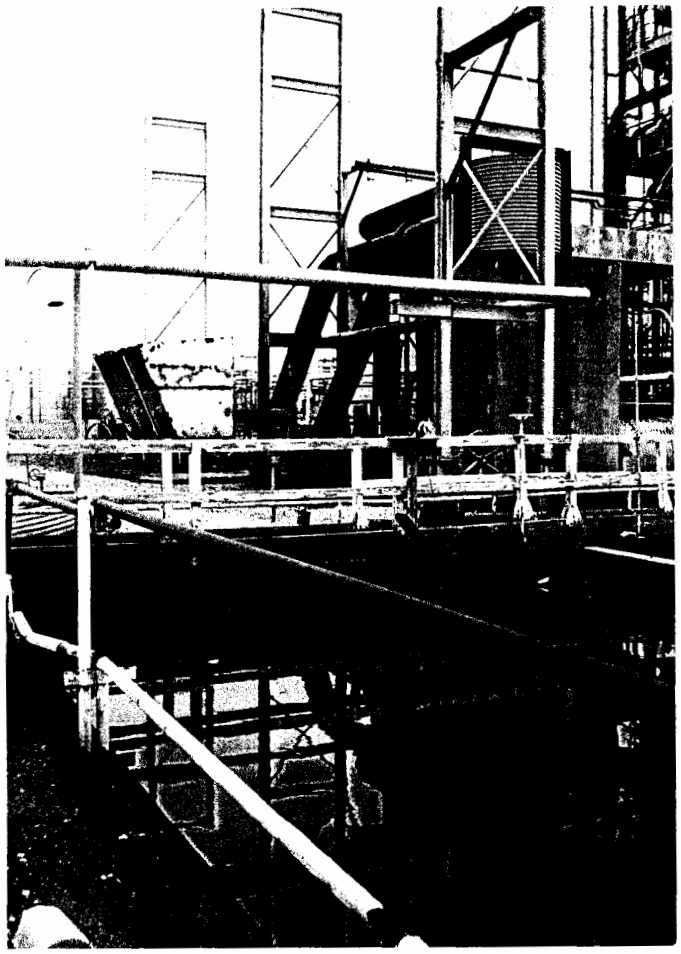
70.1-79.1 9 and 14 Oil/Water Separators. View facing west. The compartments in the foreground are the 14 Separators.



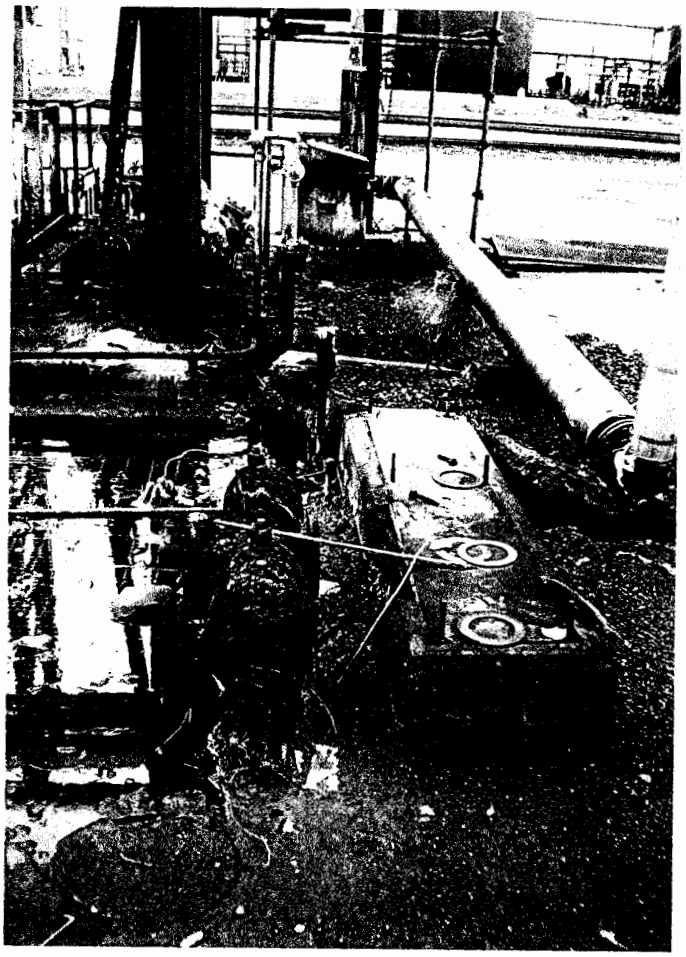
70.2-79.2 9 and 14 Oil/Water Separators. Panoramic view facing north to northeast toward the 14 Separator and portions of the 9 Separator. The large dark aboveground tanks in the background of the photograph are part of the Asphalt Plant Area (SWMU 56).



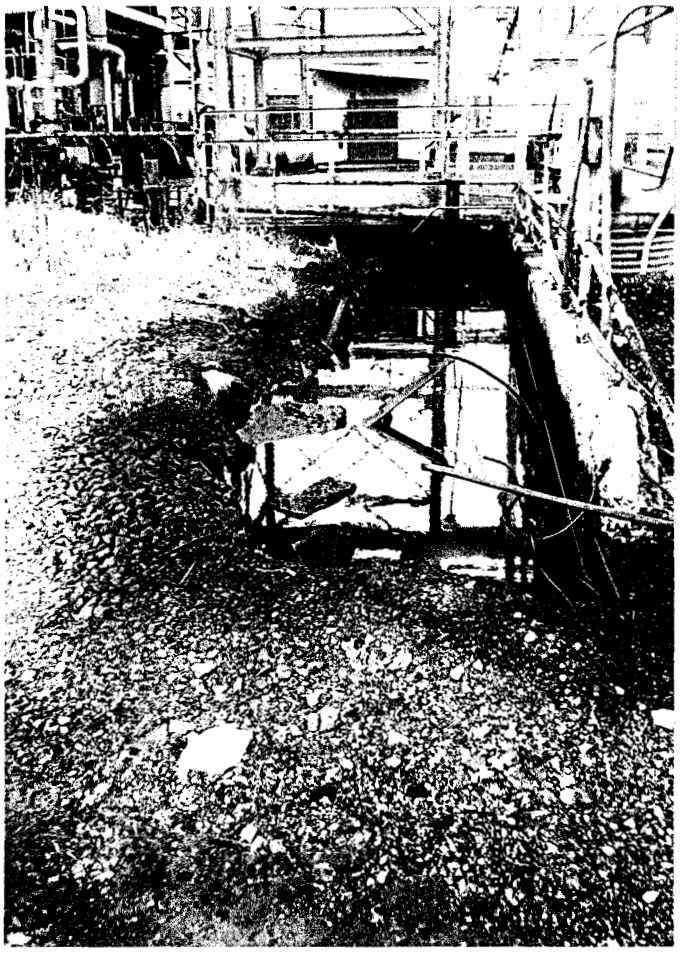
70.3-79.3 9 and 14 Oil/Water Separators. View facing west to northwest. The rubble pile at the west end of the separators is the demolished portion of 9 Separator.



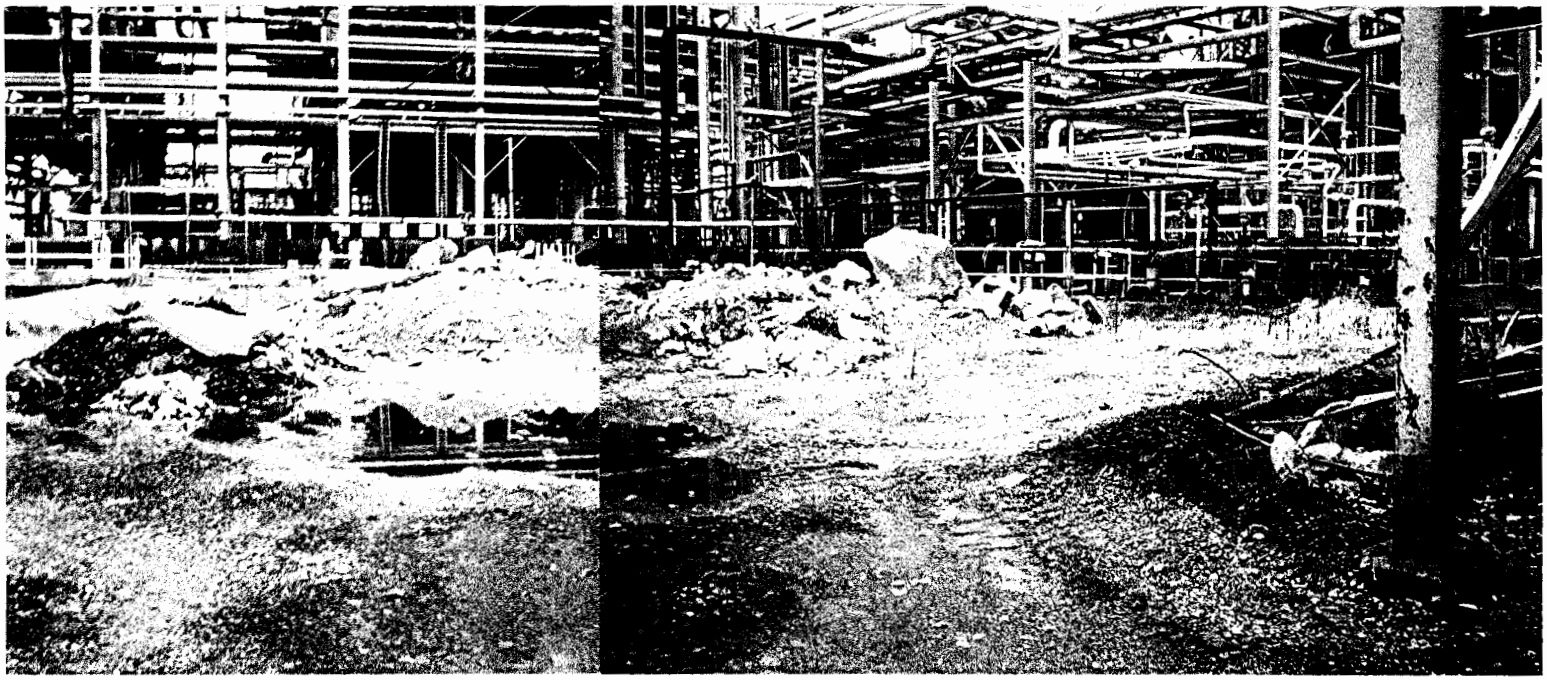
70.4-79.4 9 and 14 Oil/Water Separators. View facing south toward the water pump and outfall pipe at the east end of the separators. This pump is primarily associated with the 14 Separator.



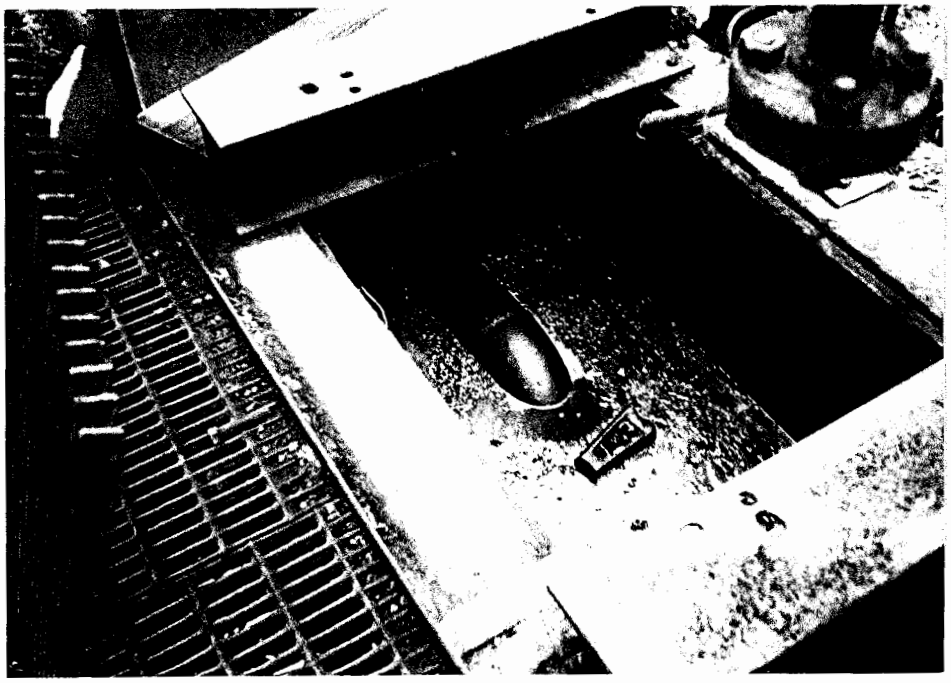
70.5-79.5 9 and 14 Oil/Water Separators. Close-up view of valves for the oil pump at east end of the separators. Note the heavy staining in the area.



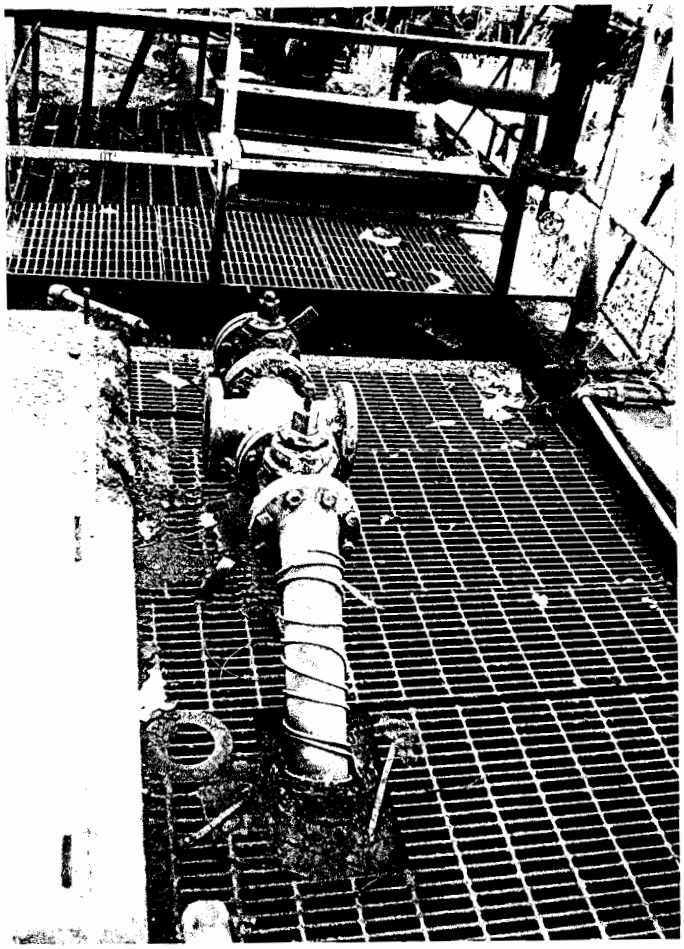
70.6-79.6 9 and 14 Oil/Water Separators. View facing west toward west end of the 9 Separator showing the demolished compartments 9A, 9B, and 9C. Note the heavy oily accumulation.



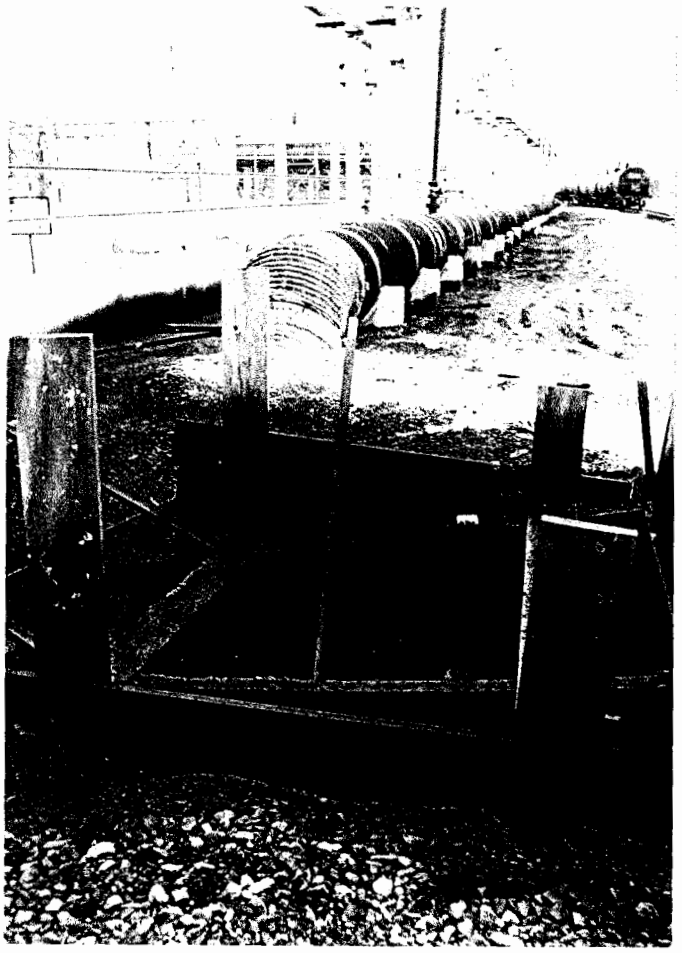
70.7-79.7 9 and 14 Oil/Water Separators. View facing south toward west end portion of the 9 Separator showing demolished compartments 9A, 9B, and 9C. The compartments are filled in with soil and construction debris (from the walls of unit).



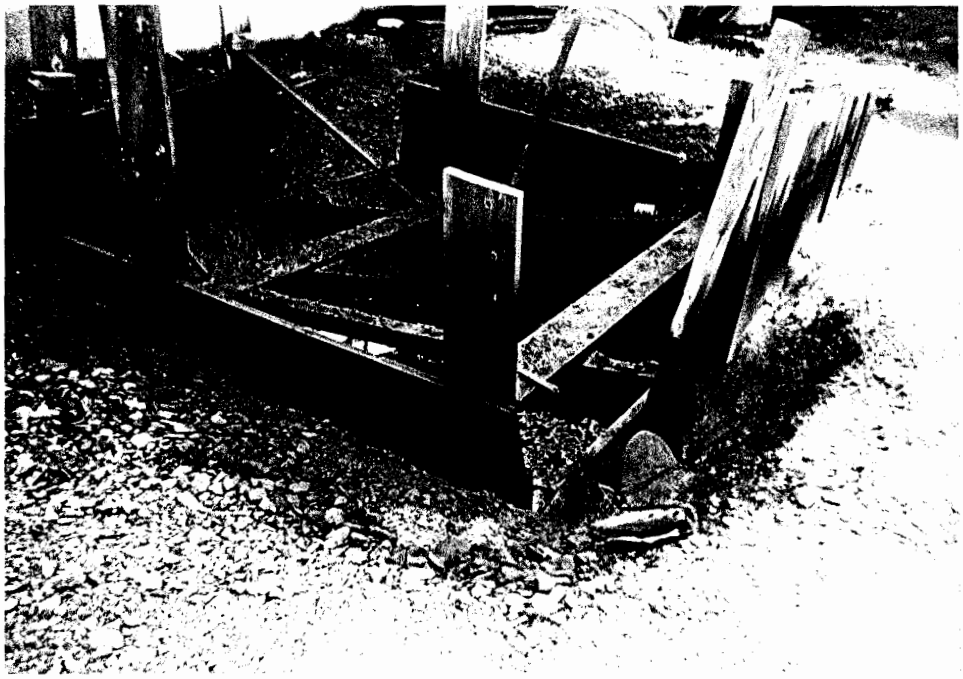
70.8-79.8 9 and 14 Oil/Water Separators. Inside view of the valve box at the west end of the 9 Separators. Note oily material which is approximately 2-3 feet deep in the valve box.



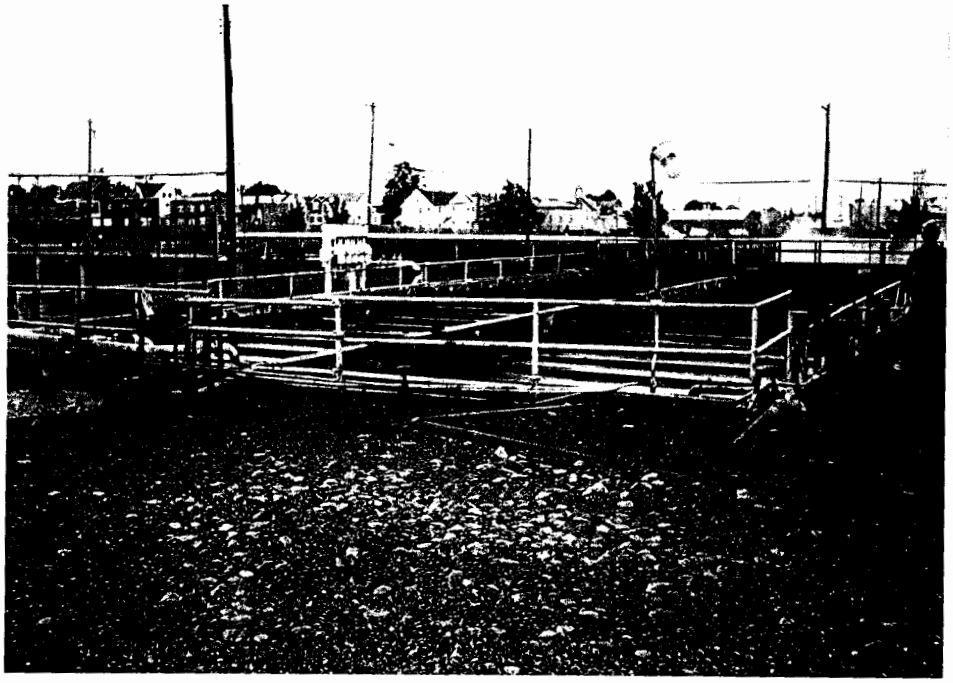
70.9-79.9 9 and 14 Oil/Water Separators. View of grated pump area at west end of the 9 Separator showing water contained beneath grated area.



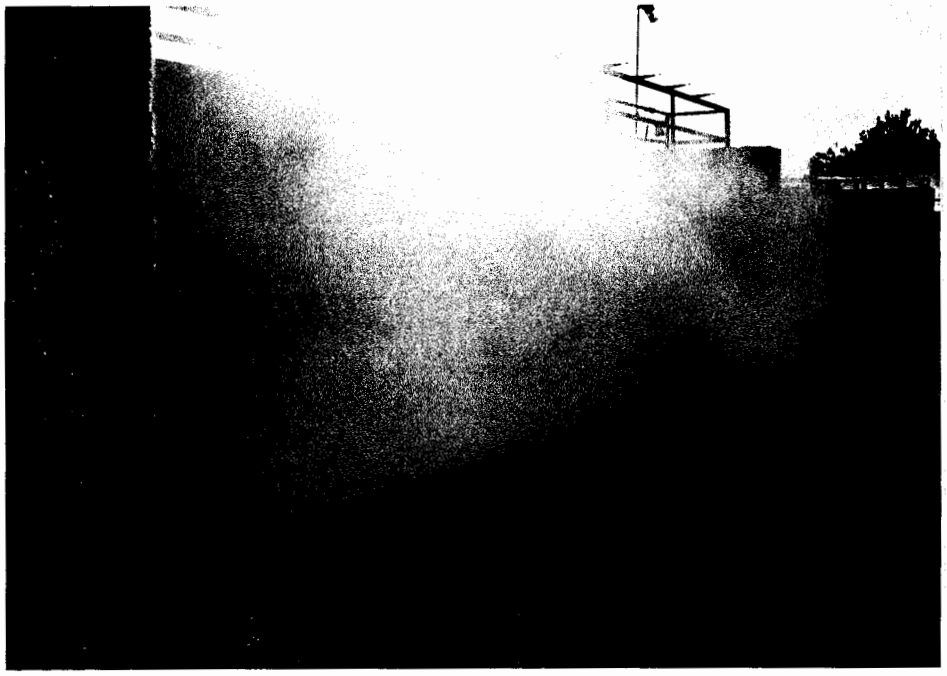
80.1 Discharge Pipe and Excavation at 9 and 14 Oil/Water Separators. View facing west toward a wastewater line (the large black corrugated pipe), through which the effluent from the 9 and 14 Oil/Water Separators (SWMUs 70 - 79) flowed to the Middle Creek Surface Drainage System (SWMU 96). The excavation pit in the foreground has been abandoned. Note the heavy staining along the pipeline and surrounding the pit. The pit is approximately eight feet square and could be as deep as ten feet.



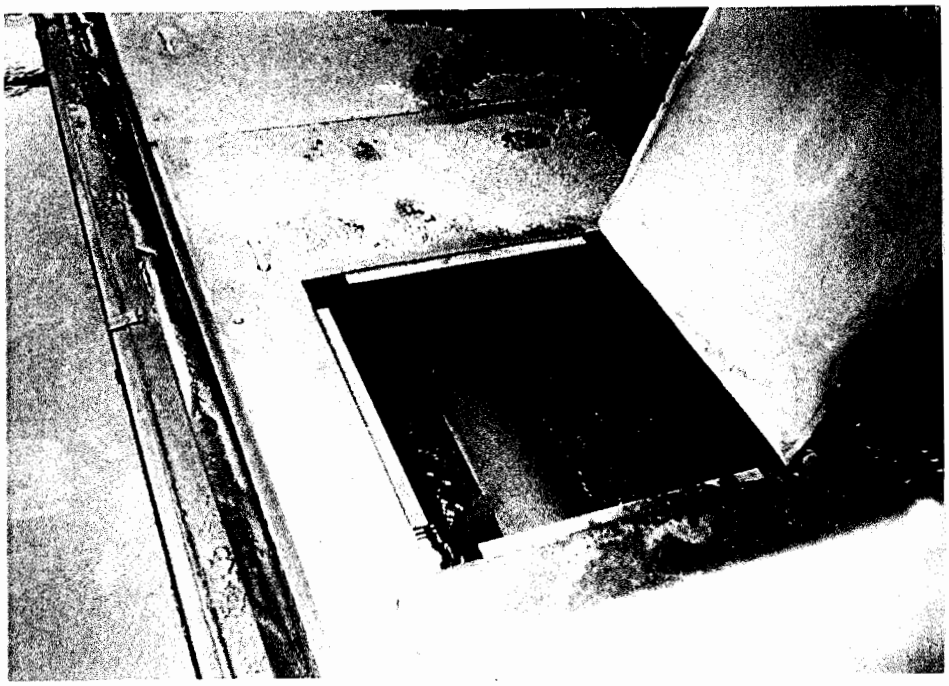
80.2 Discharge Pipe and Excavation at 9 and 14 Oil/Water Separators. Close-up view facing west of the excavation pit. Note the dark oily standing liquid in the excavation and the oily emulsion on the surface of the liquid. Note also the dark staining surrounding the excavation and coating the wooden shoring system.



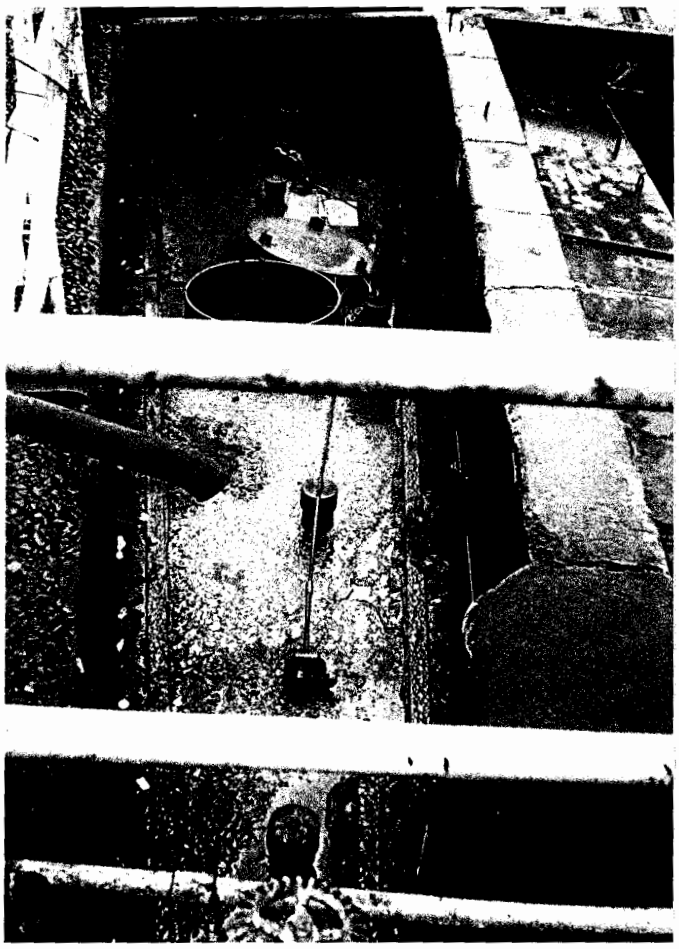
81.1 10 Oil/Water Separators. View facing east. Pump and sump
82.1 for the unit is visible in the foreground. Note the heavy staining surrounding the unit.



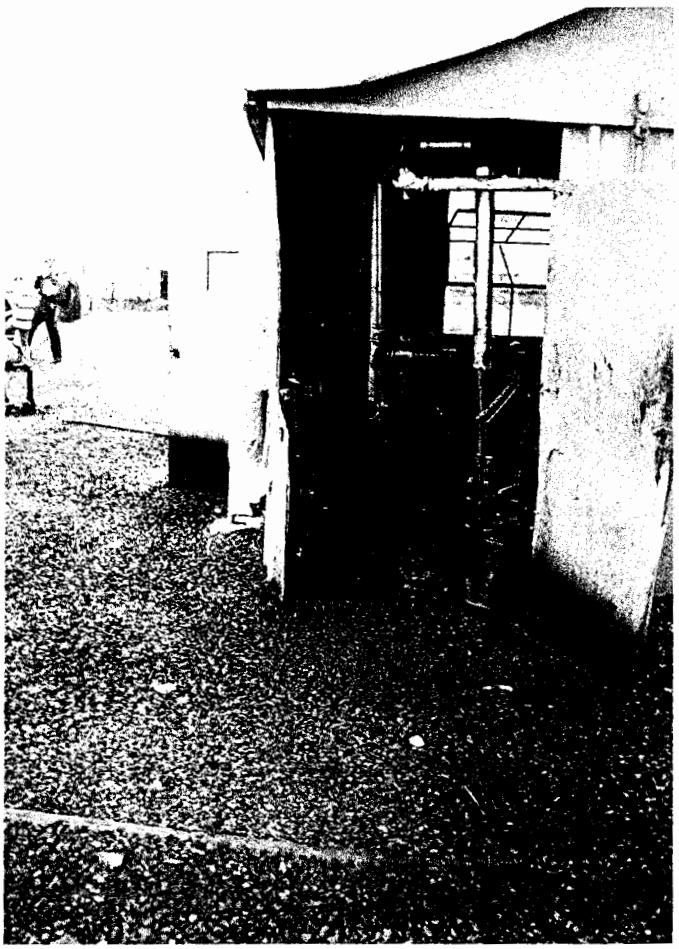
81.2
82.2 10 Oil/Water Separators. View facing north toward the final discharge from the unit into the Walker's Run portion of the Middle Creek Surface Drainage System (SWMU 96).



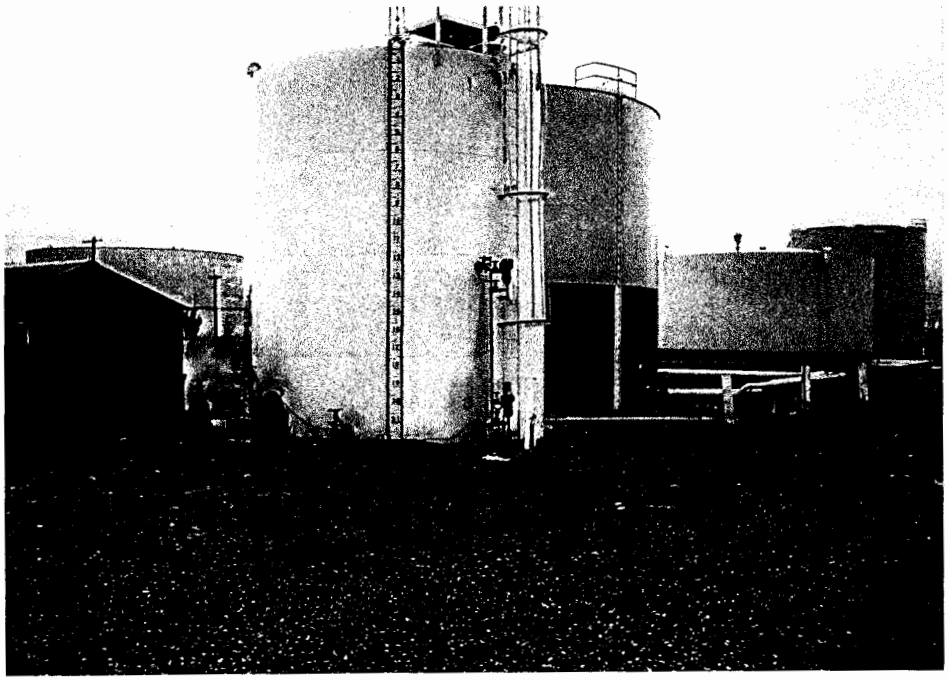
81.3
82.3 10 Oil/Water Separators. Close-up view facing east and down into the end compartment of the unit. The pipe shown is an adjustable skimmer. Note the oily emulsion in the water.



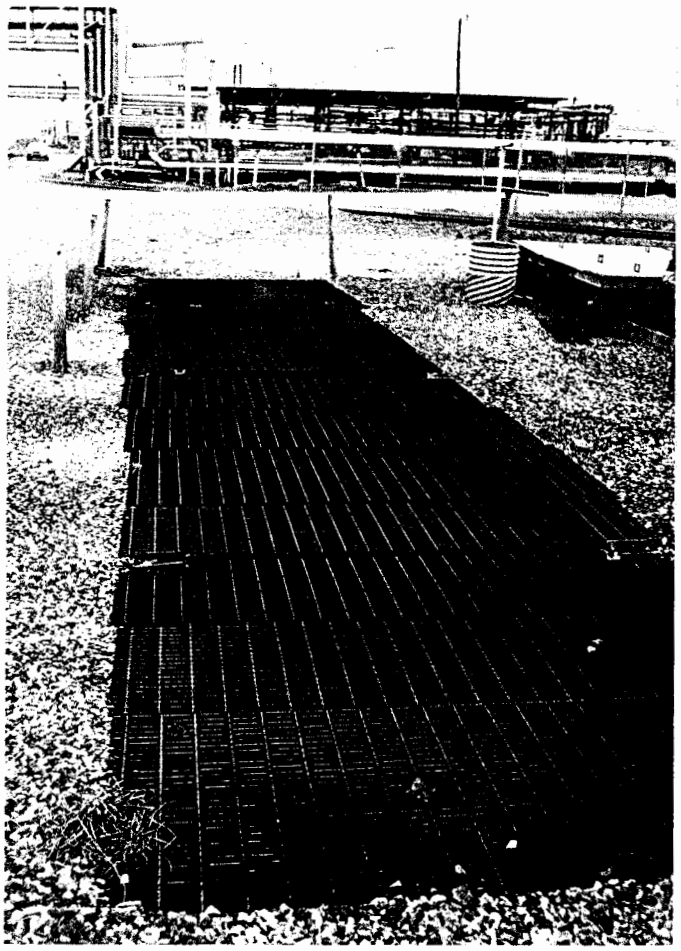
81.4
82.4 10 Oil/Water Separators. View facing east into sump and control valve on north end the unit. Note the heavy oily accumulation.



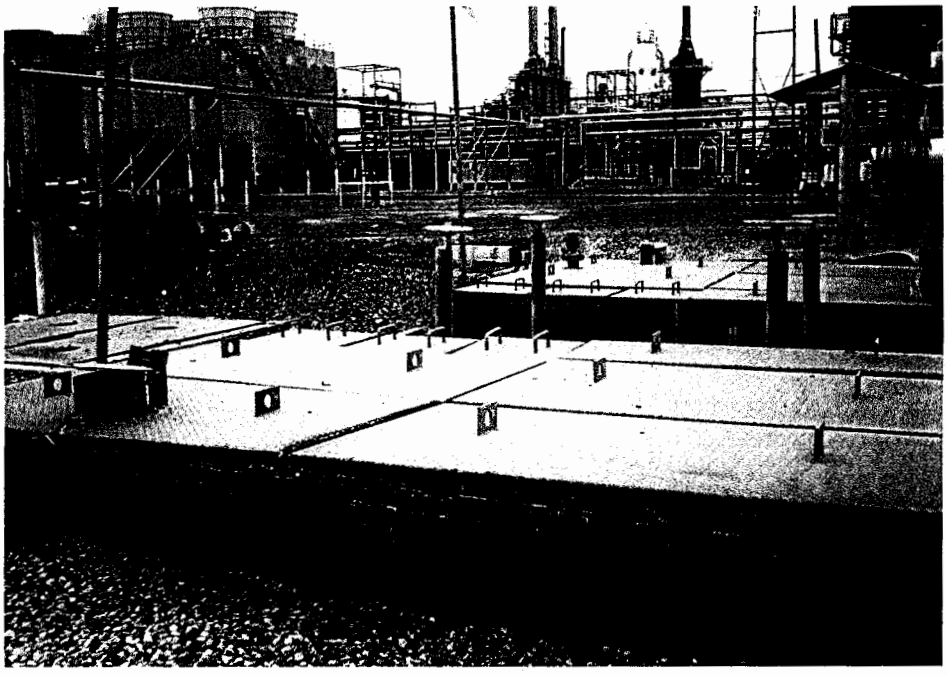
81.5
82.5 10 Oil/Water Separators. View facing east toward pump house adjacent to the separator. Note heavy staining on building and surrounding ground surface. The floor (ground surface) of the pump house is saturated with oil.



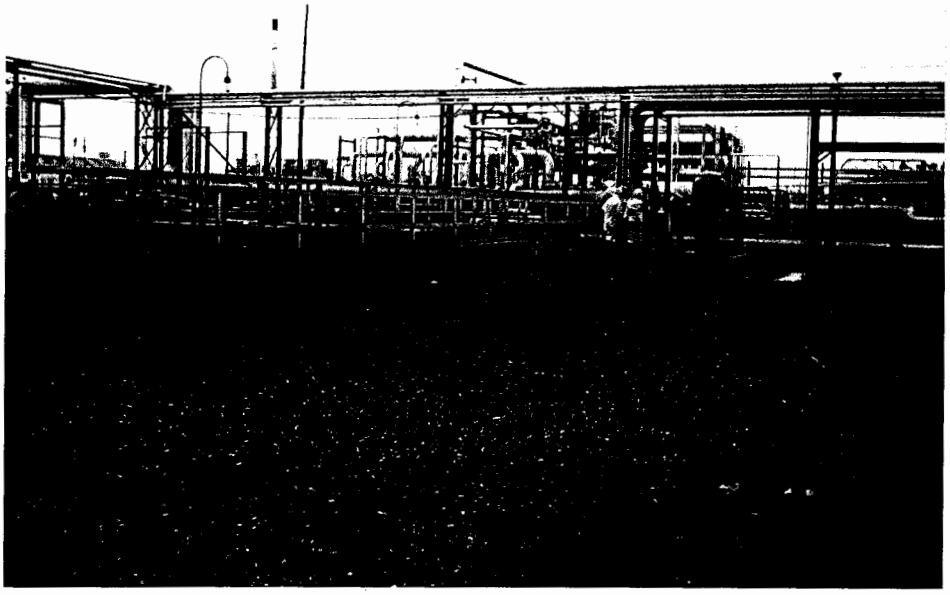
81.6
82.6 10 Oil/Water Separators. View facing south toward oil recovery tank (no longer in use) west of pump house (left side of photo) for the separator. Waste material in this tank was formerly routed to Slop Oil Tank 132 (SWMU 59).



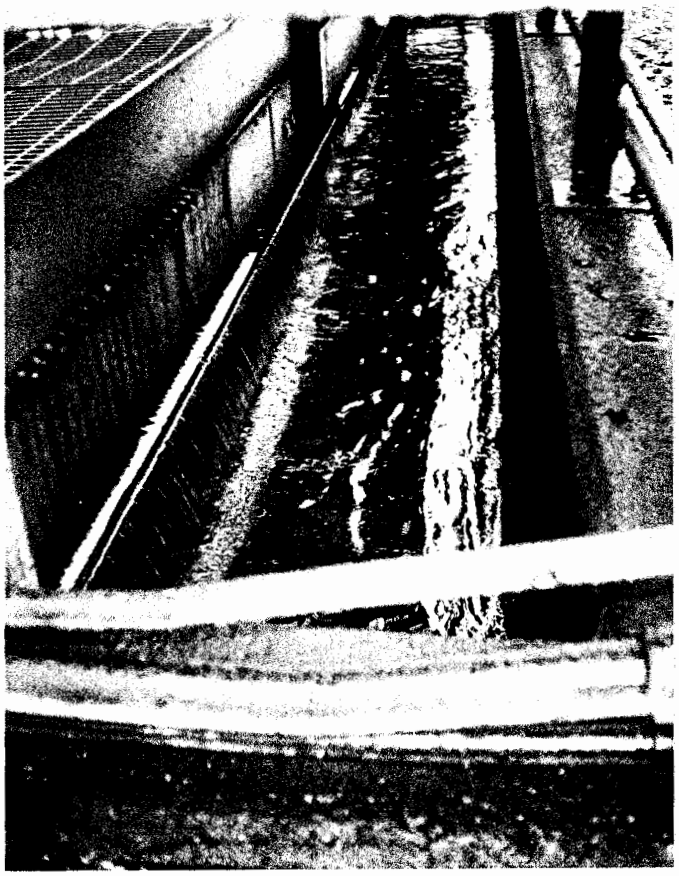
83.1 12A Oil/Water Separator. View facing west of the outfall area for the separator.



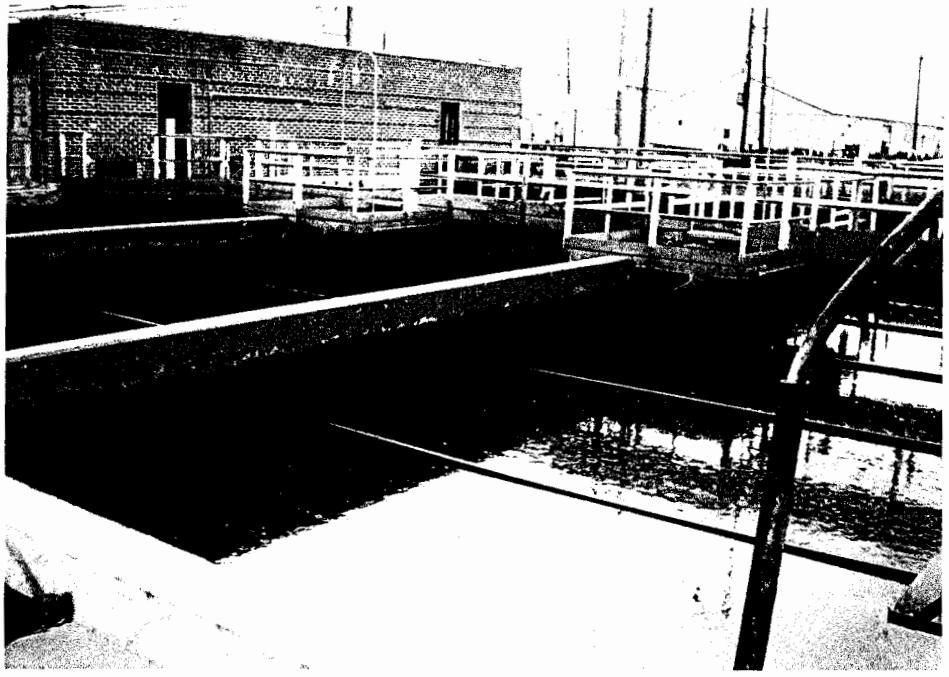
83.2 12A Oil/Water Separator. View facing east of the inlet area of the separator. The unit is underground, beneath the metal compartments shown in the photograph.



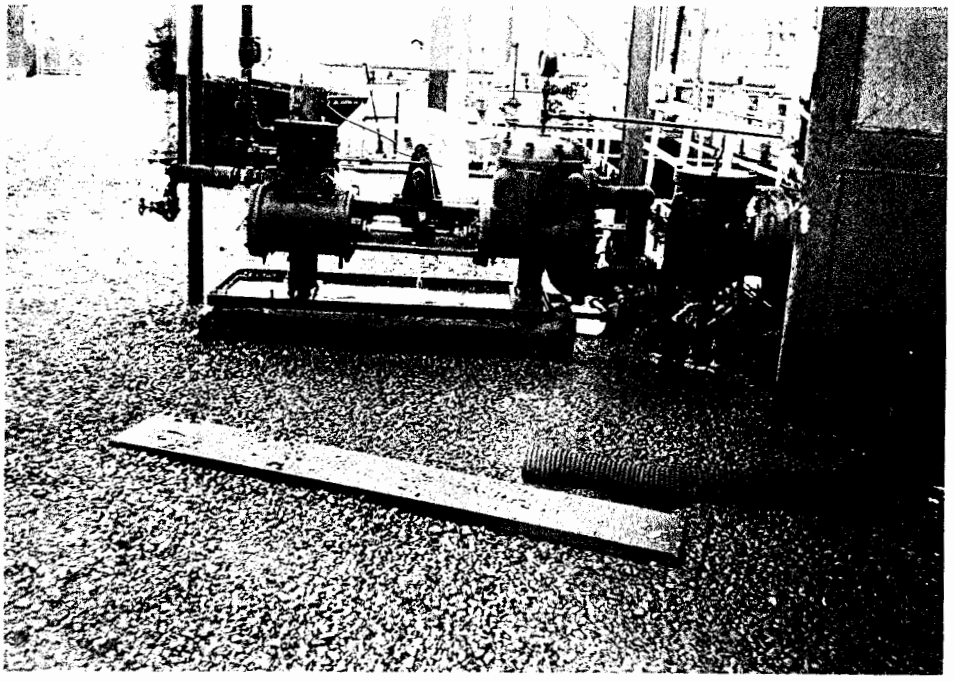
84.1 16 Oil/Water Separators. View facing south. The water pump
85.1 for the unit is the large green device to the right of the
86.1 unit.



84.2 16 Oil/Water Separators. Close-up view of the weir
85.2 mechanism at the north (discharge) end of the unit. Note
86.2 the oil build-up on the concrete surrounding the weir.

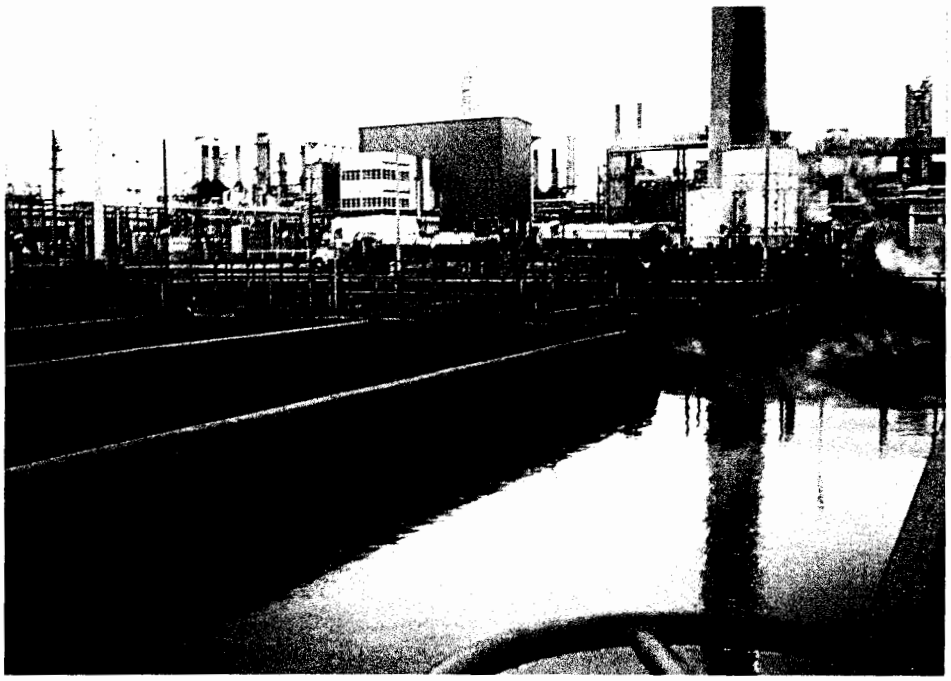


84.3 16 Oil/Water Separators. Close-up view of the 16A, 16B, and
85.3 16C separators.
86.3



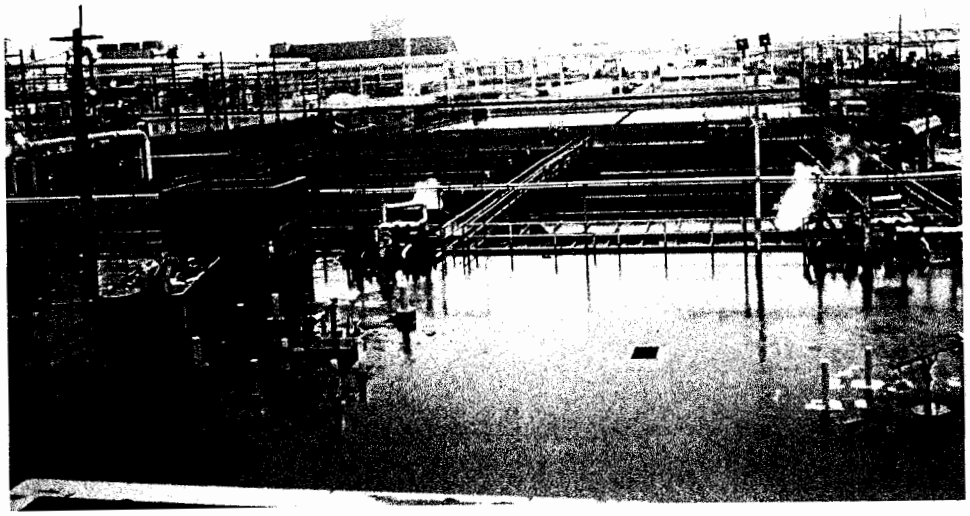
84.4 16 Oil/Water Separators. View facing west toward pump at
85.4 the south end of the separator. Note the oil saturated
86.4 gravel surrounding the pump.

87.1-94.1 15 Oil/Water Separators. View facing northeast toward the east end of the separator. Note the oil accumulation in the unit.



87.2-94.2 15 Oil/Water Separators. View facing north toward the compartments 15A, 15B, 15C, 15D, 15E, 15F, 15G, and 15H of the separator.

87.3-94.3 15 Oil/Water Separators. View facing east toward the south end of the separator. The Middle Creek Surface Drainage System (SWMU 96) and pipes (white) leading to DELCORA are visible to the right of the separator.

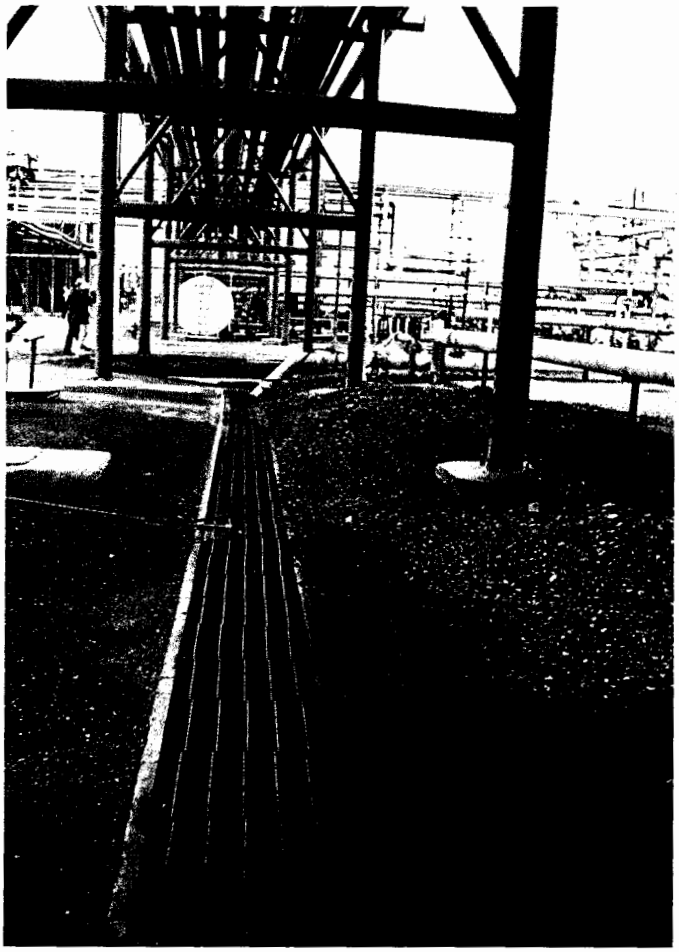


87.4-94.4 15 Oil/Water Separators. Overview facing east toward the separator. The Hazardous Waste Container Storage Pad (SWMU 22) is the large fenced concrete pad just beyond the separator.

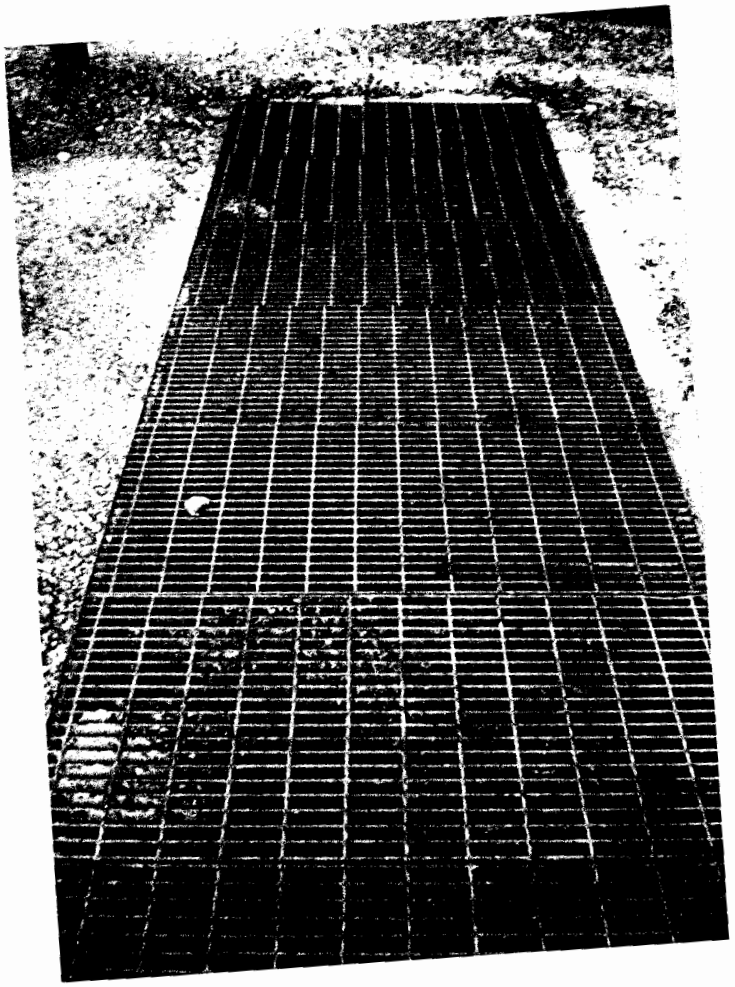
95.1 Combined Process/Storm Sewer System. View facing northwest showing a representative sump in the northeast Tank Farm located north of the FCC Unit.

95.2 Combined Process/Storm Sewer System. View facing northwest toward the northeast Tank Farm shows four sumps for former tanks (one per tank) in the area. Each sump is controlled by a valve and discharges to the storm sewer pipeline.

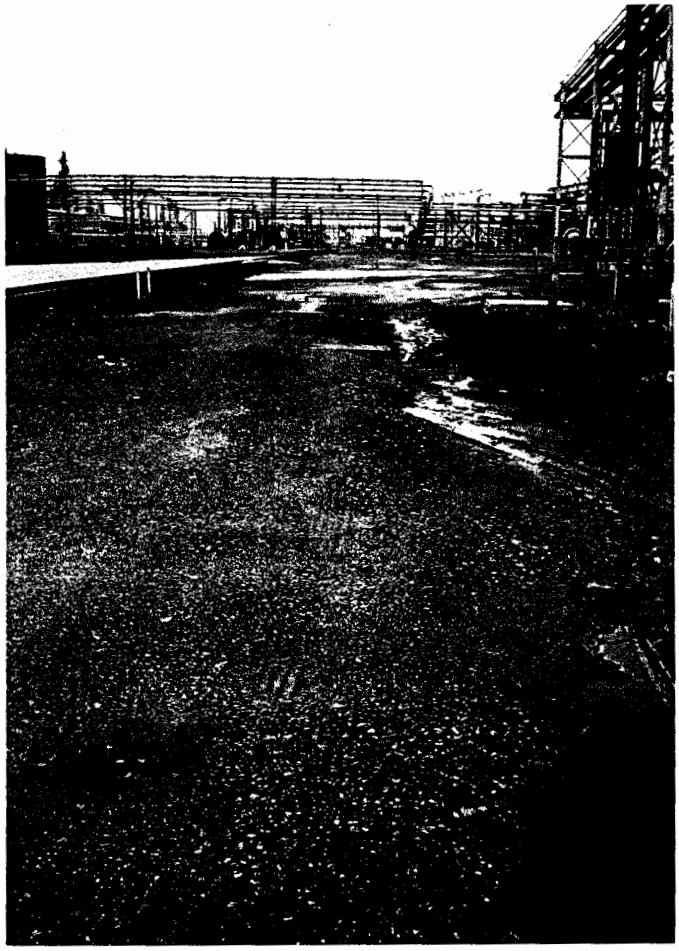
95.3 Combined Process/Storm Sewer System. View facing north toward a typical sewer drain in the 10-4 Plant. The sand surrounding the sewer drain is to prevent run off from entering the drain during shut down periods (poor quality photograph).



95.4 Combined Process/Storm Sewer System. View facing north showing the grated sump which runs along Hewes Avenue from the Tank Farm east of the 18 Plant.



95.5 Combined Process/Storm Sewer System. View facing south toward old grated sewer box constructed of stone and brick (visible when grate was raised) in the vicinity of the Old 18 Plant Sludge Basin (SWMU 26).

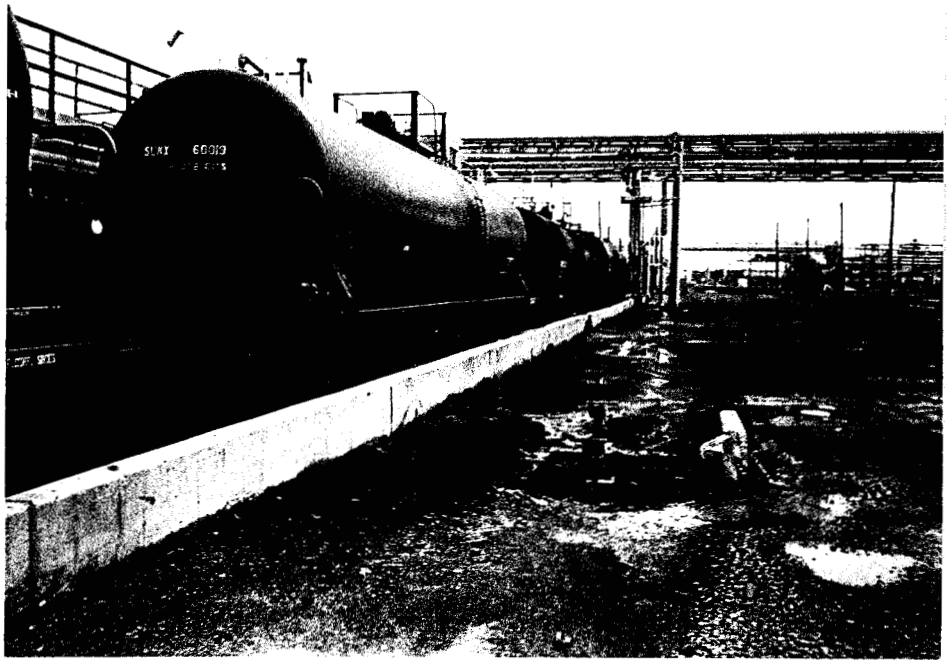


95.6 Combined Process/Storm Sewer System. View facing east along north side of the old 9 and 14 Oil/Water Separators (SWMUs 70-79) shows a large storm sewer drain and ditch.

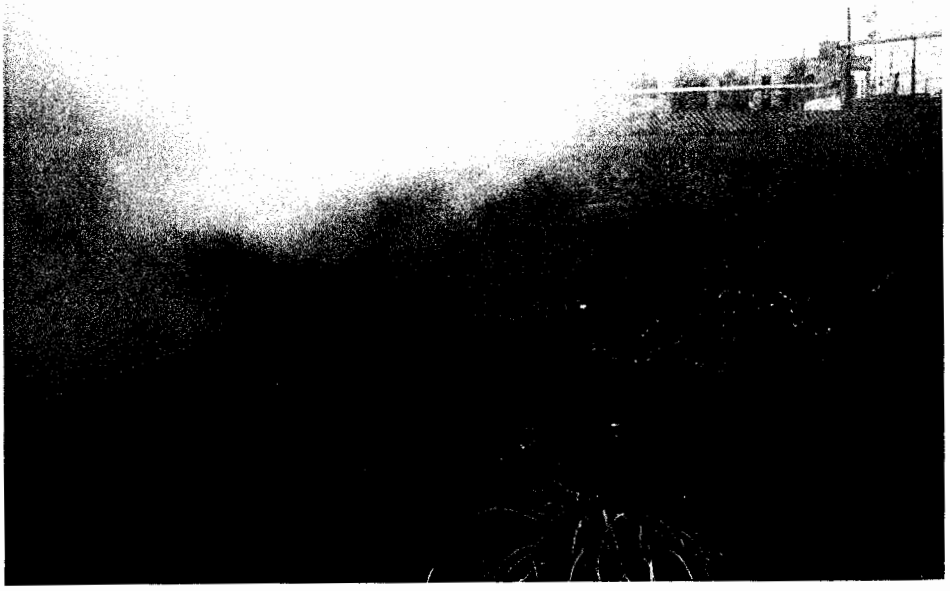
95.7 Combined Process/Storm Sewer System. View facing northeast toward the railroad tracks just south of the 16 Oil/Water Separators (SWMU 84-86) where several sewer drains are visible in the depressions (arrows). Staining is apparent around the drains from sewer backup.

95.8 Combined Process/Storm Sewer System. Close-up view of the sewer drains between the railroad tracks. The apparent staining is due to sewer back-ups during high precipitation periods.

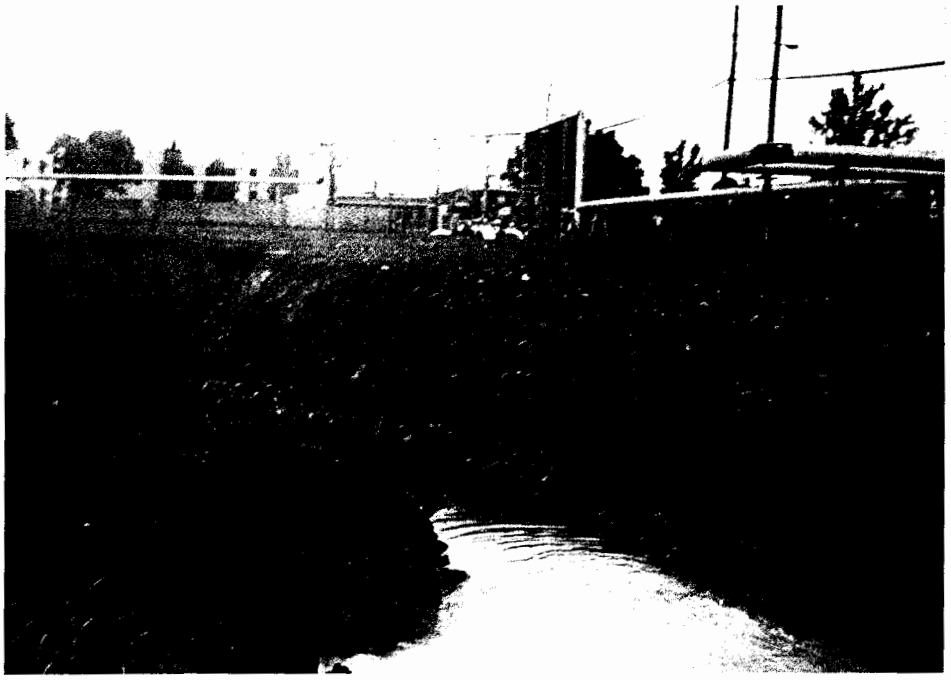
95.9 Combined Process/Storm Sewer System. Close-up view facing northeast toward one of the sewer drains which backs up periodically. The drain is located northeast of the 16 Oil/Water Separators (SWMUs 84-86).



95.10 Combined Process/Storm Sewer System. View facing east toward a storm sewer drain and valve for the portion of Rail Car Loading/Unloading Areas and Associated Tracks (SWMU 99) located to the east of Hewes Avenue. Discharge from this drain is routed to the Middle Creek Surface Drainage System (SWMU 96).

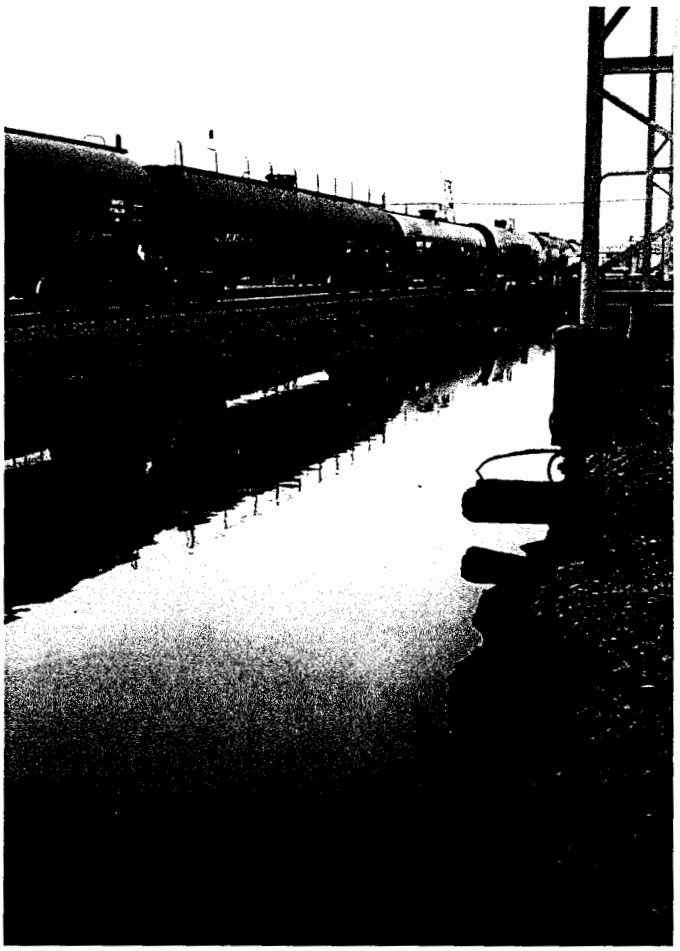


96.1 Middle Creek Surface Drainage System. View facing north toward the final discharge point for the 10 Oil/Water Separators (SWMUs 81 - 82). The separators discharge into the Walker's Run portion of the Middle Creek Surface Drainage System (SWMU 96). Note staining on surrounding gravel area.

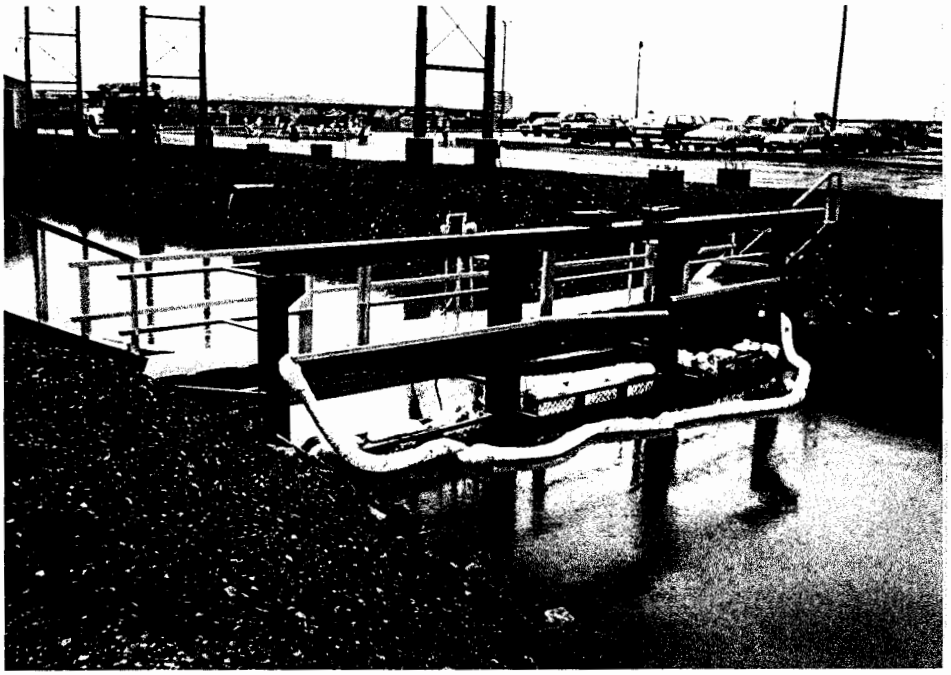


96.2 Middle Creek Surface Drainage System. View facing north toward receiving area in Middle Creek for discharge from the 10 Oil/Water Separators (SWMUs 81 - 82). Note heavy staining along creek banks.

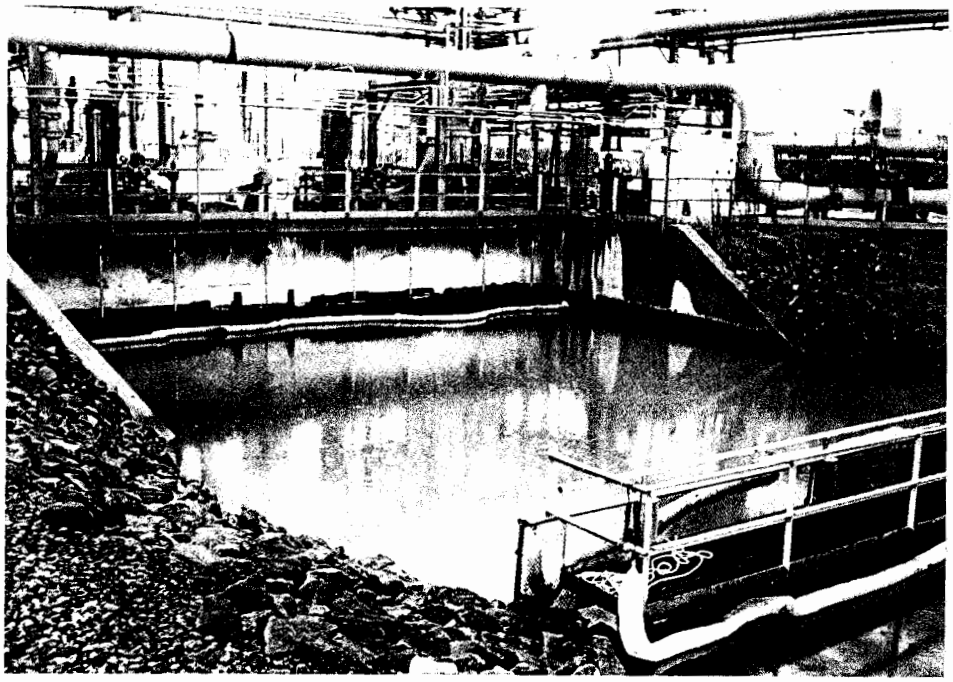
96.3 Middle Creek Surface Drainage System. View facing south along Walkers Run showing discharge from the 1C Oil/Water Separator (SWMU 65). Note the heavy build-up of sludge along the drainage way.



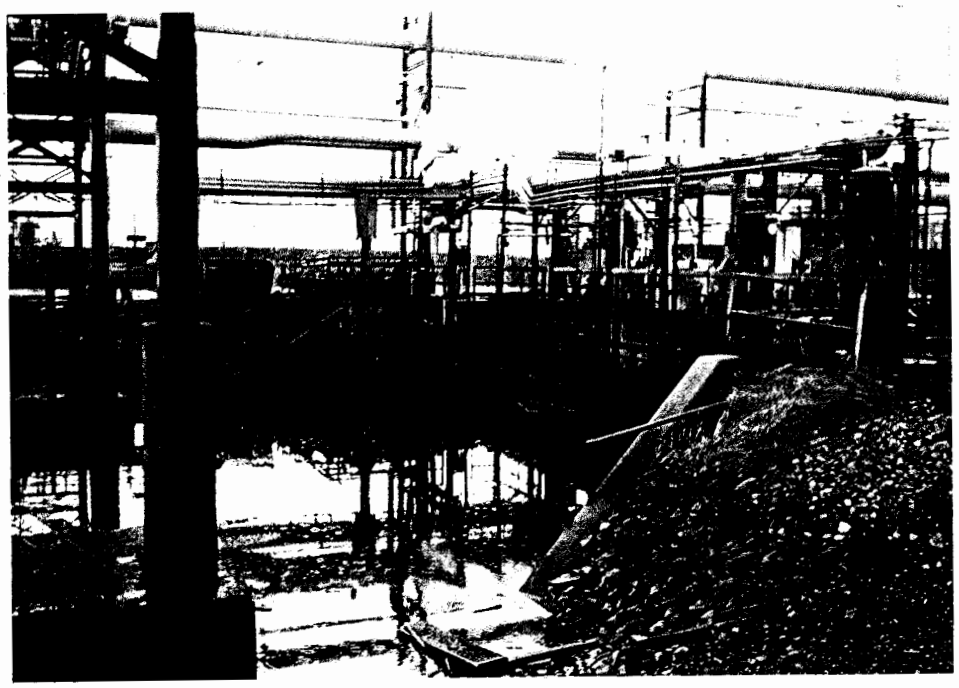
96.4 Middle Creek Surface Drainage System. View facing west along Middle Creek just south of the Heat Exchanger Bundle Cleaning Area (SWMU 62). Note heavy sludge accumulation along the banks of the way.



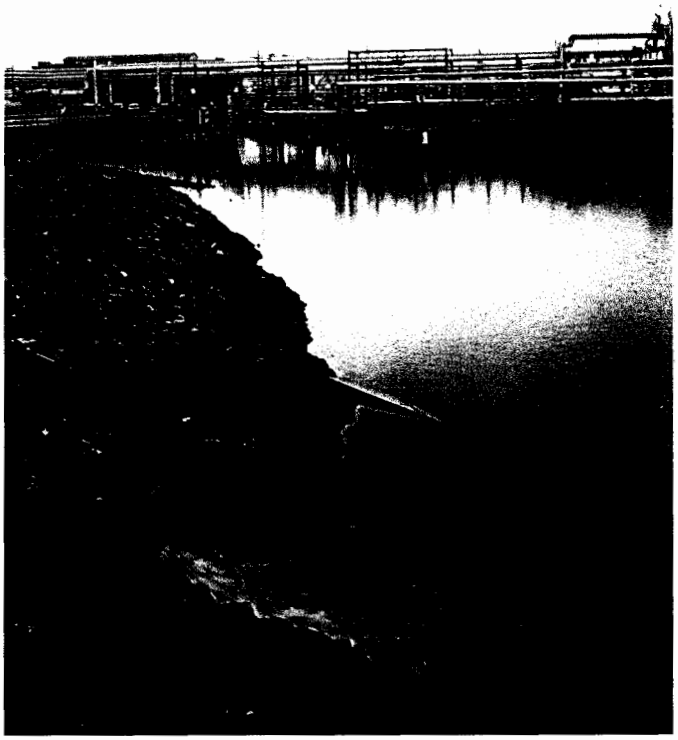
96.5 Middle Creek Surface Drainage System. View facing southeast toward a caged boom area just west (downstream) of the interceptor dam on Middle Creek. Note the concrete walls of Impoundment Tank T-101 (SWMU 32) in left background.



96.6 Middle Creek Surface Drainage System. View facing east showing the west (downstream) side of the dam for Middle Creek. The caged boom in the foreground is approximately 100 feet east of the booms in Photograph 96.5.



96.7 Middle Creek Surface Drainage System. View facing southwest toward the east (upstream) side of the dam for Middle Creek. Note the heavy staining in the creek and surrounding areas. The overhead pipes are to the DELCORA POTW.

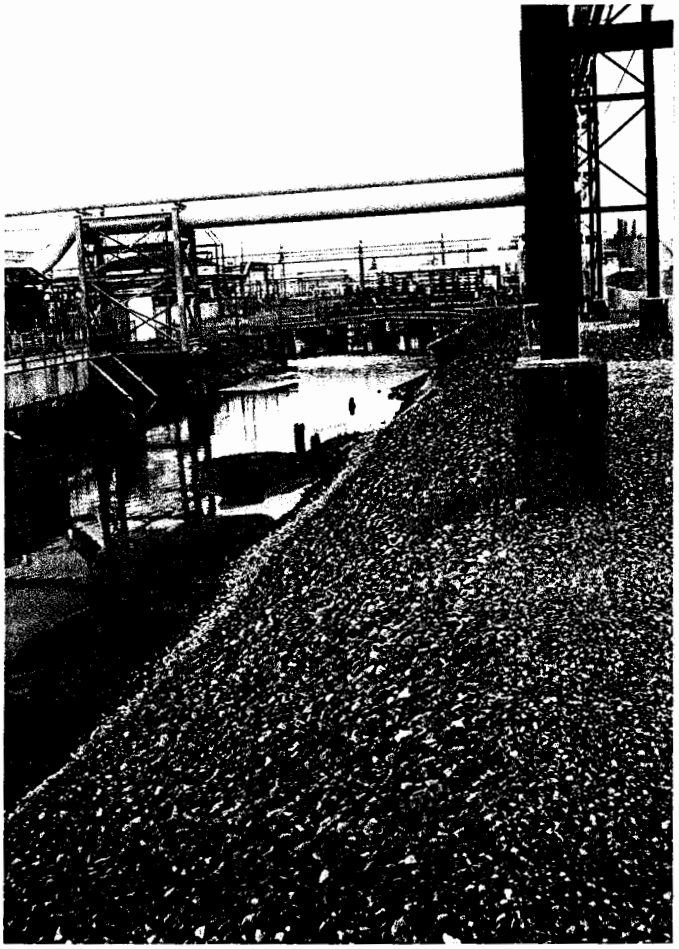


96.8 Middle Creek Surface Drainage System. View facing east along the neutralization area and main basin upstream of the Middle Creek interceptor dam. Note the pipe in the foreground discharging into the creek.

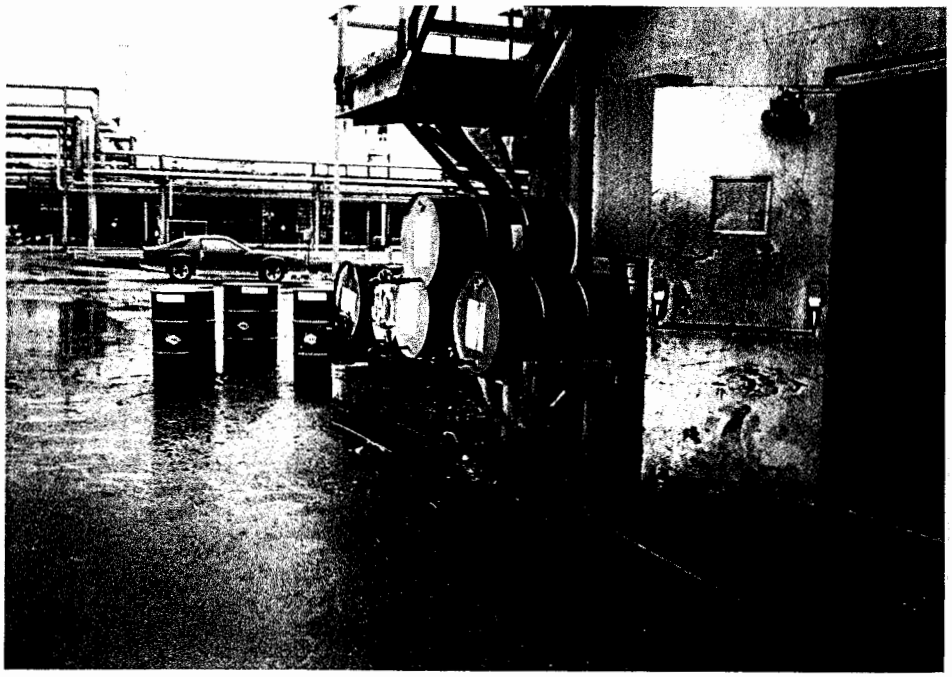
96.9 Middle Creek Surface Drainage System. View facing southwest of Middle Creek near the point where it discharges to the Delaware River beyond the Middle Creek Dam.

96.10 Middle Creek Surface Drainage System. View facing northeast of a portion of Middle Creek east of the Solid Waste Facility. Note the heavy accumulation of sludge in the creek.

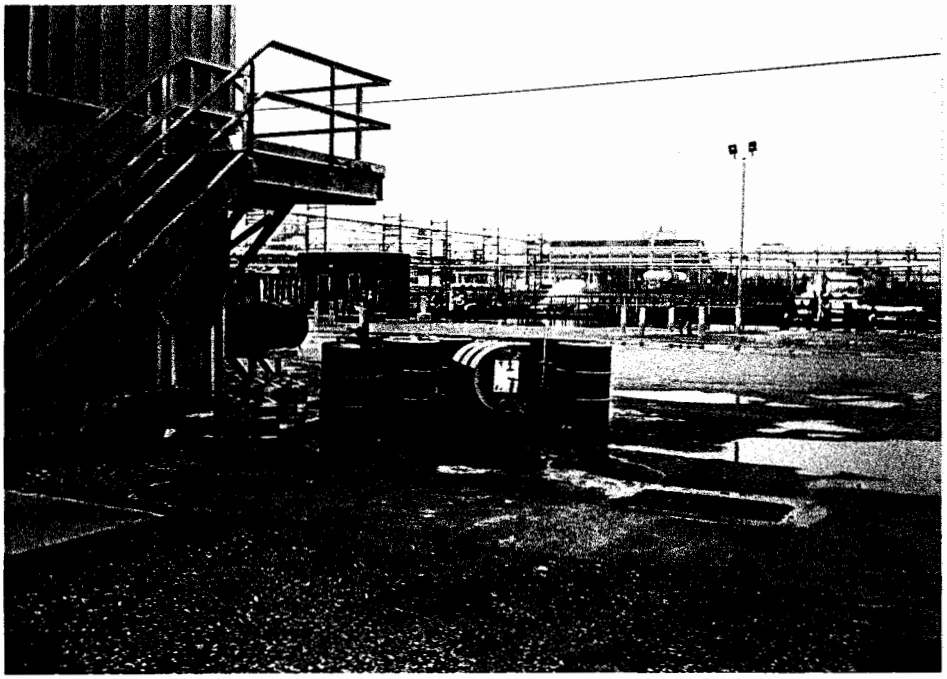
96.11 Middle Creek Surface Drainage System. View facing north of a portion of Middle Creek which crosses under Hewes Avenue. Note the oily barrel in the creek.



96.12 Middle Creek Surface Drainage System. View facing northeast toward a portion of Middle Creek downstream from the interceptor dam. The white overhead pipes lead from the 15 Oil/Water Separators (SWMUs 87 - 94) (located to the left and behind the photographer) to the off-site DELCORA POTW. Note the staining and sludge-like material along the closer edge of the creek.

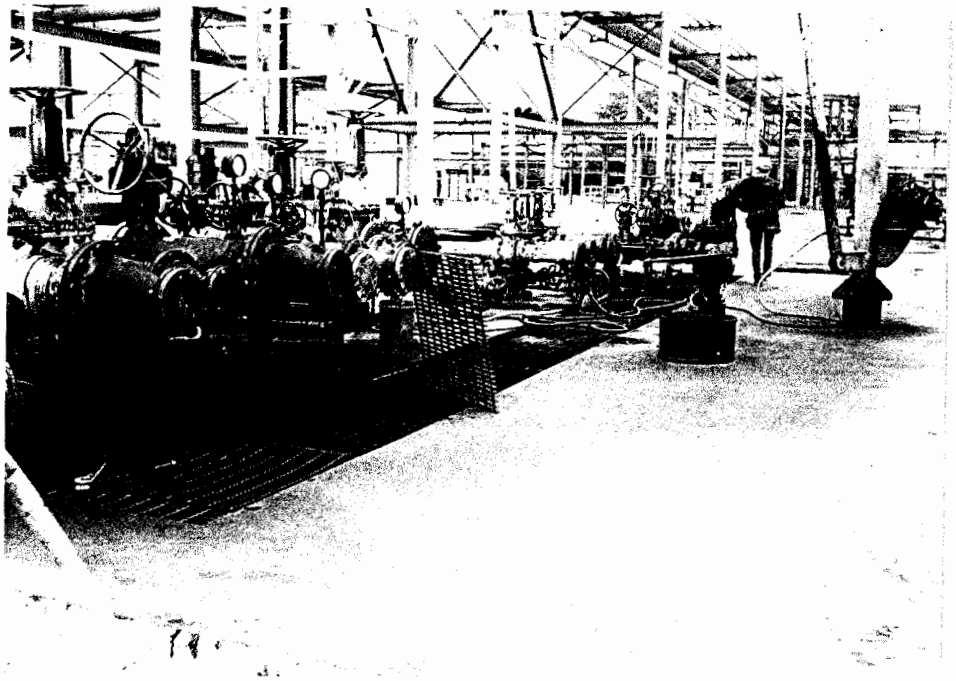


97.1 Product Drip Collection Areas. View facing north of the drip collection area for oils used at the Solid Waste Facility. Note extensive oily staining on concrete and soil under the drums.

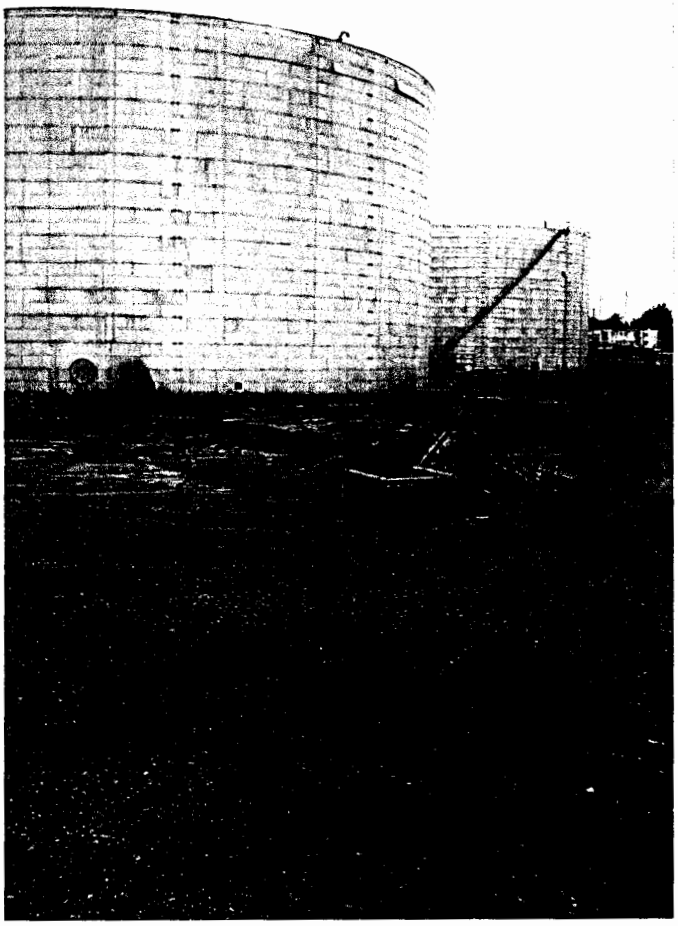


97.2 Product Drip Collection Areas. View looking west of the drip collection area for oils used at the Solid Waste Facility. Note the proximity of the storm sewer (SWMU 95).

97.3 Product Drip Collection Areas. Close-up view facing east of a drip collection area inside the Ethylene Complex. The grated sump does not drain. The darkened pavement is from a recent rain.

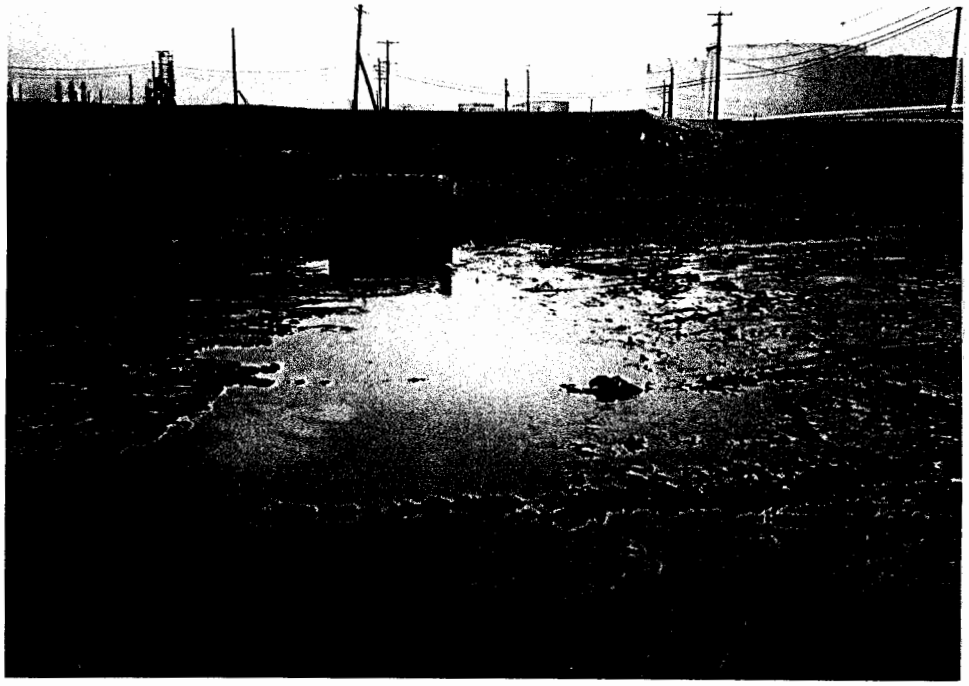


97.4 Product Drip Collection Areas. View facing north toward a large drip collection area near the Dock No. 2 Recovery Well System (SWMU 51). Drippage from connections between refinery piping and hoses used to load tanker ships is collected in a shallow, grated, concrete basin. The collection area does not have a drain.



98.1 Aboveground Tank Containment Areas. View facing north toward Tank 10 located north of the 1C Oil/Water Separator (SWMU 65). Note the sump for the tank which contains oil released from a pipe at the base of the tank.

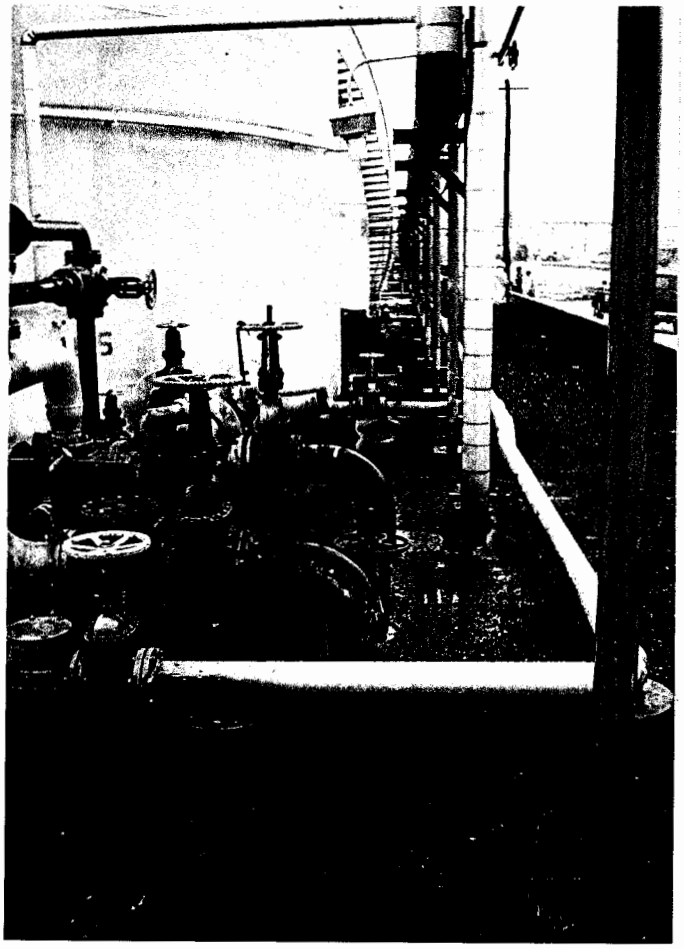
98.2 Aboveground Tank Containment Areas. Close-up view of the leaking pipe from Tank 10. Note the heavy oil accumulation in the area which drains to the containment area sump connected to the Combined Process/Storm Sewer System (SWMU 95).



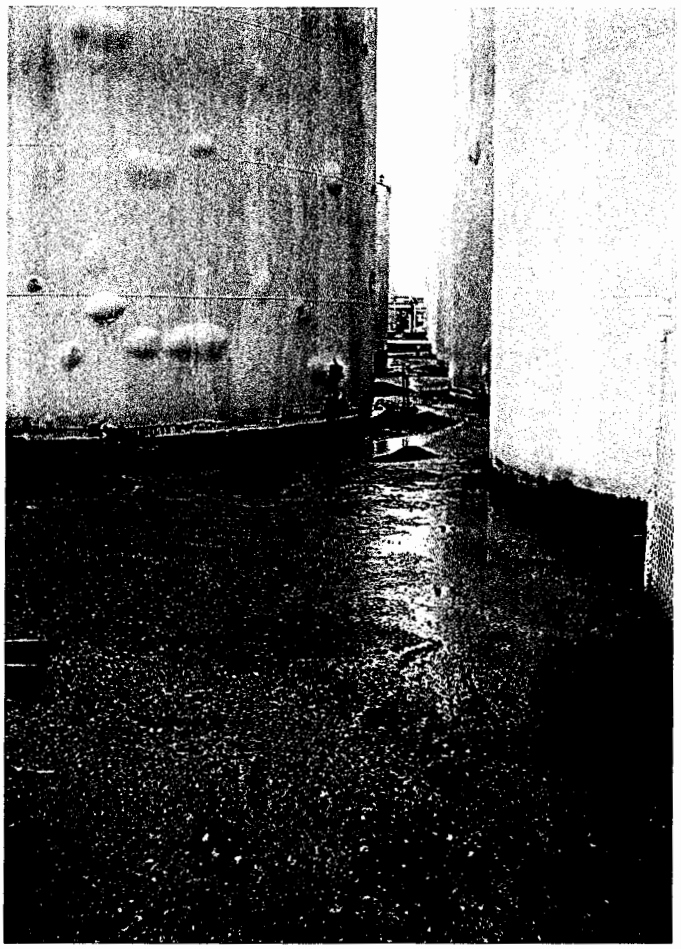
98.3 Aboveground Tank Containment Areas. View facing south to southeast toward the receiving sump for the containment area surrounding Tank 10. Note the heavy oil accumulation in the containment area.

98.4 Aboveground Tank Containment Areas. Close-up view of a pipe at the base of Tank 10 which may be contributing to the leakage in the containment area.

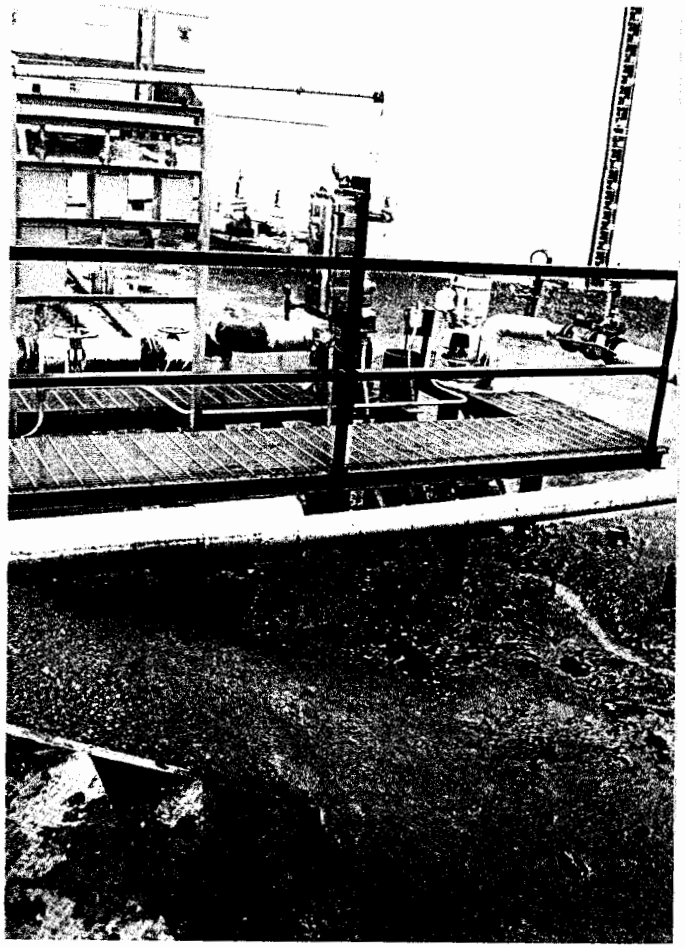
98.5 Aboveground Tank Containment Areas. View facing north toward the containment area for tanks located within the H-13 Tank Farm. Note the oil saturated condition of the ground surface. This is typical of the older tank farms at the facility.



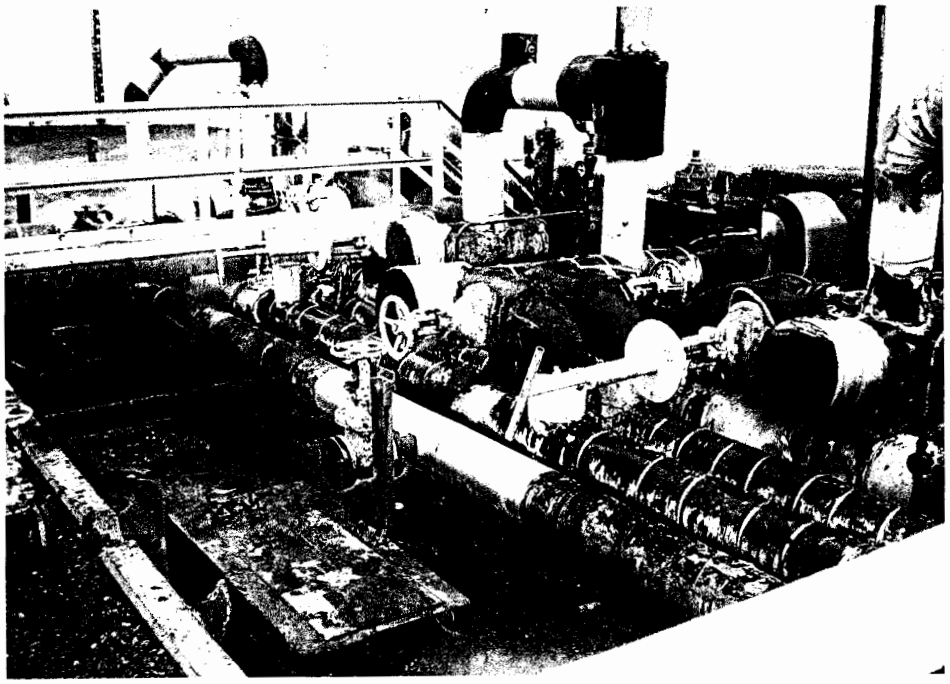
98.6 Aboveground Tank Containment Areas. View facing east toward the pump systems for the tanks in the H-13 Tank Farm. Note the concrete containment wall to the right in the photograph. This containment wall does not completely surround the tank farm.



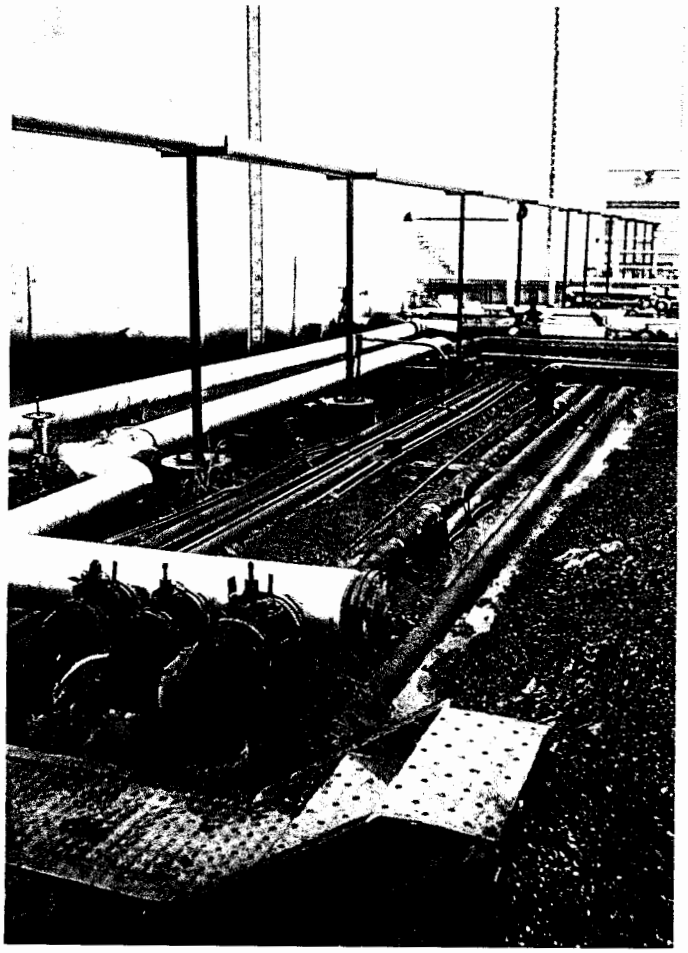
98.7 Aboveground Tank Containment Areas. View facing east toward a portion of the containment area for tanks in the H-13 Tank Farm. Note the heavy staining and rusting condition of the tank bottoms.



98.8 Aboveground Tank Containment Areas. View facing west toward the slop oil pump for the containment area for the H-13 Tank Area. Note the oil saturated condition of the ground surface.



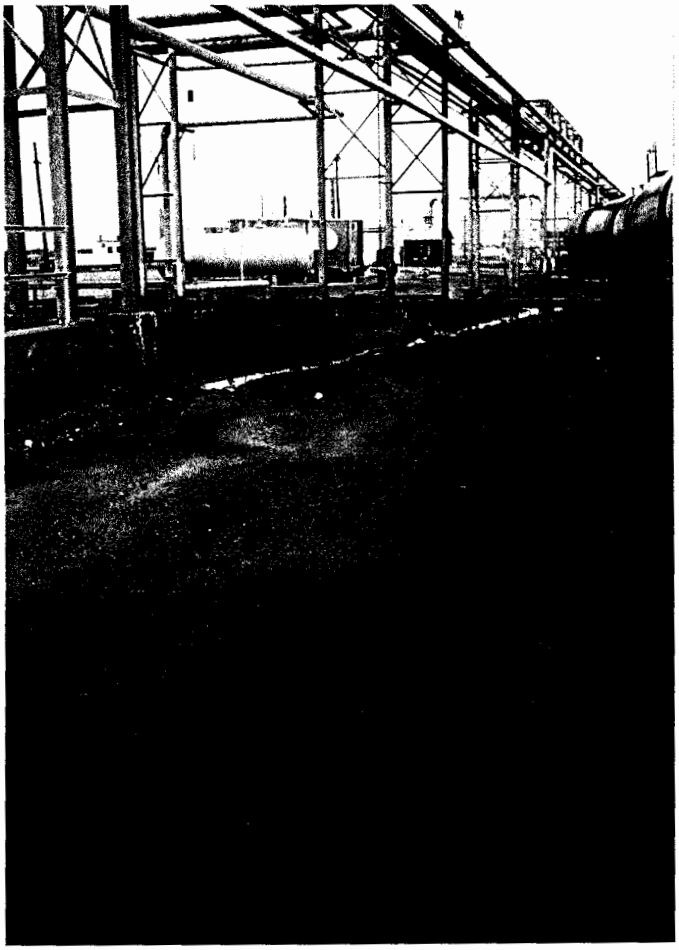
98.9 Aboveground Tank Containment Areas. View facing south toward a pipeline and pump station for tanks in the H-13 Tank Farm containment area.



98.10 Above-Ground Tank Containment Areas. View facing north toward a pipeline for tanks in the H-13 Tank Farm containment area (SWMU 98).

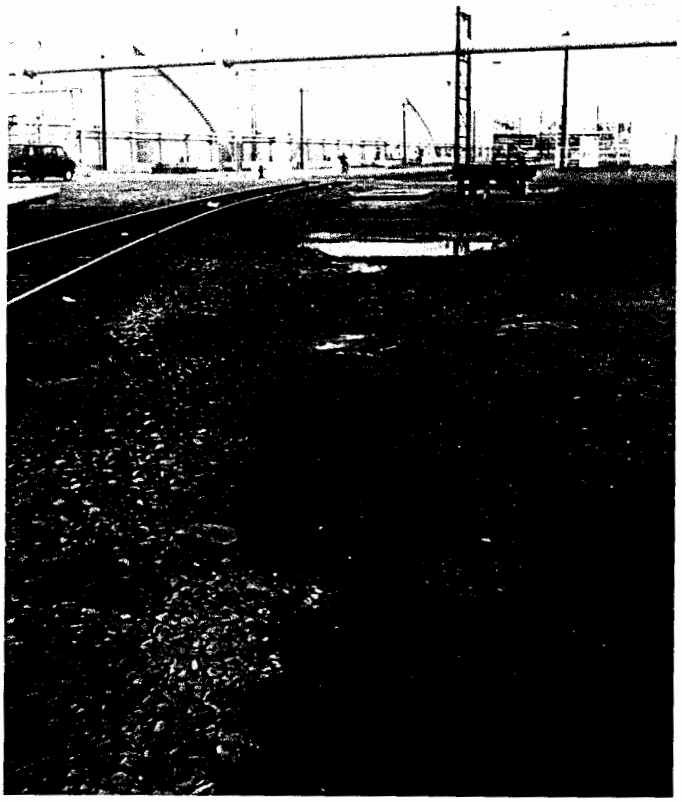
98.11 Above-Ground Tank Containment Areas. View facing west toward the containment area for Tank 211 located west of the 1A Oil/Water Separator (SWMU 63). Note the sump and drain for the area.

98.12 Above-Ground Tank Containment Areas. View facing south toward an old containment area for a slop oil tank. The tank was recently removed. Note the oil saturated conditions on the ground surface.

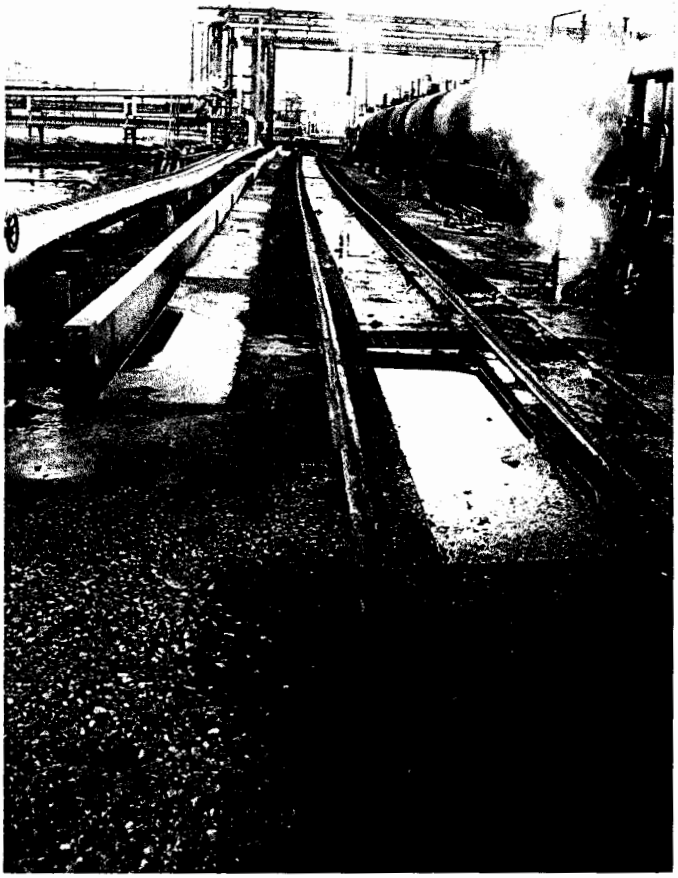


99.1 Rail Car Loading/Unloading Areas and Associated Tracks. View facing east of the railroad tracks near Middle Creek Road. Note the heavy oil staining in the area, due to drains in the area which back up and deposit oily water.

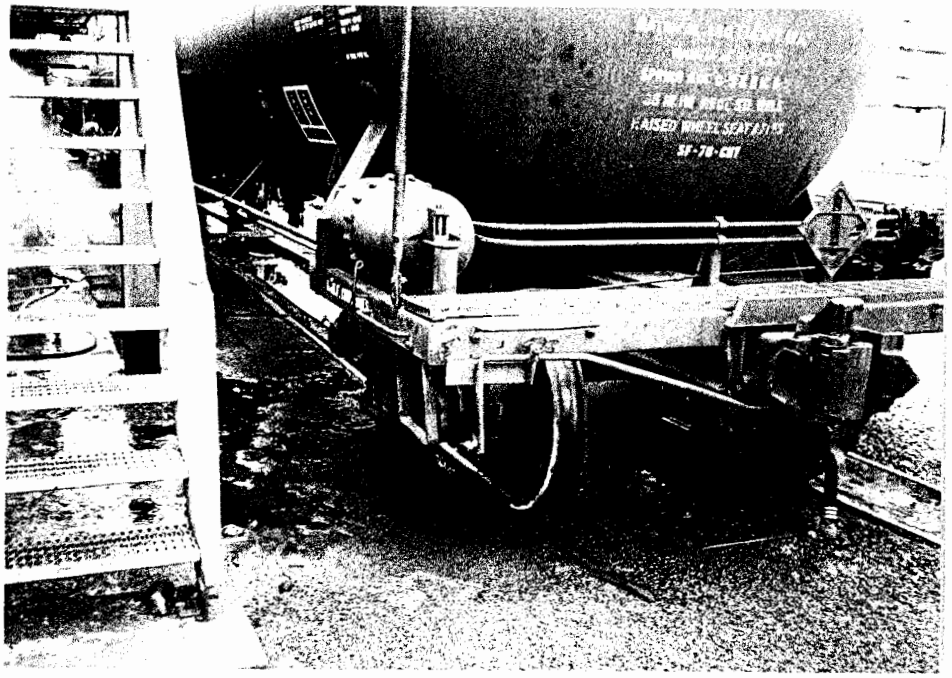
99.2 Rail Car Loading/Unloading Areas and Associated Tracks. View facing east along rail line associated with the rail car area located to the east of Hewes Avenue. Note the oil saturated conditions of the surrounding ground surface.



99.3 Rail Car Loading/Unloading Areas and Associated Tracks. View along a railroad spur to north of the old 9 and 14 Oil/Water Separators (SWMUs 70-79) showing typical spillage seen along railroad tracks at the facility.



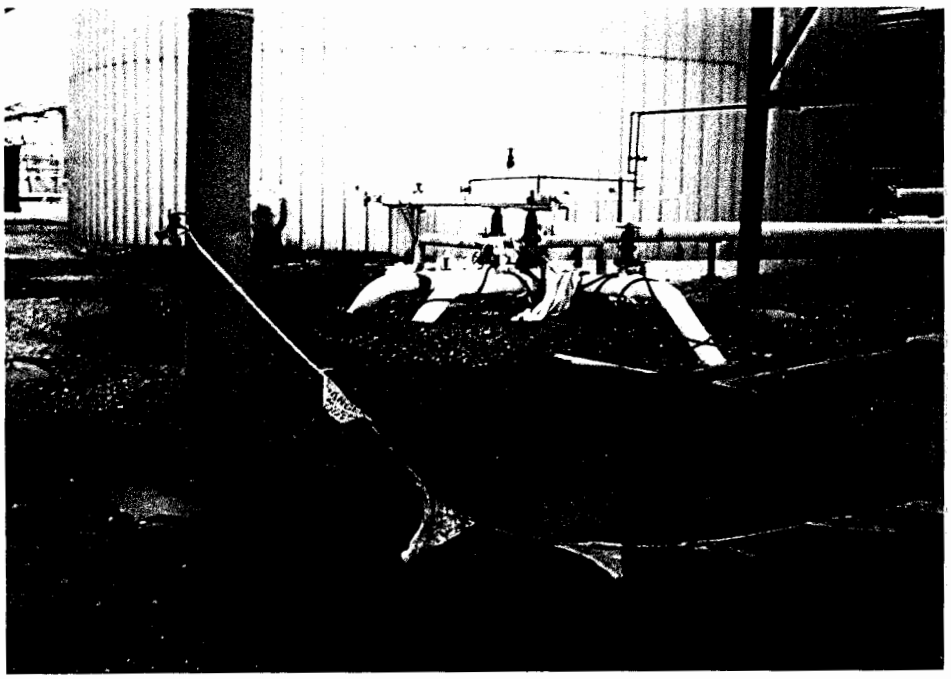
99.4 Rail Car Loading/Unloading Areas and Associated Tracks. View facing east toward the loading area located to the east of Hewes Avenue. Note the oil saturated conditions of the containment troughs and surrounding ground surface.



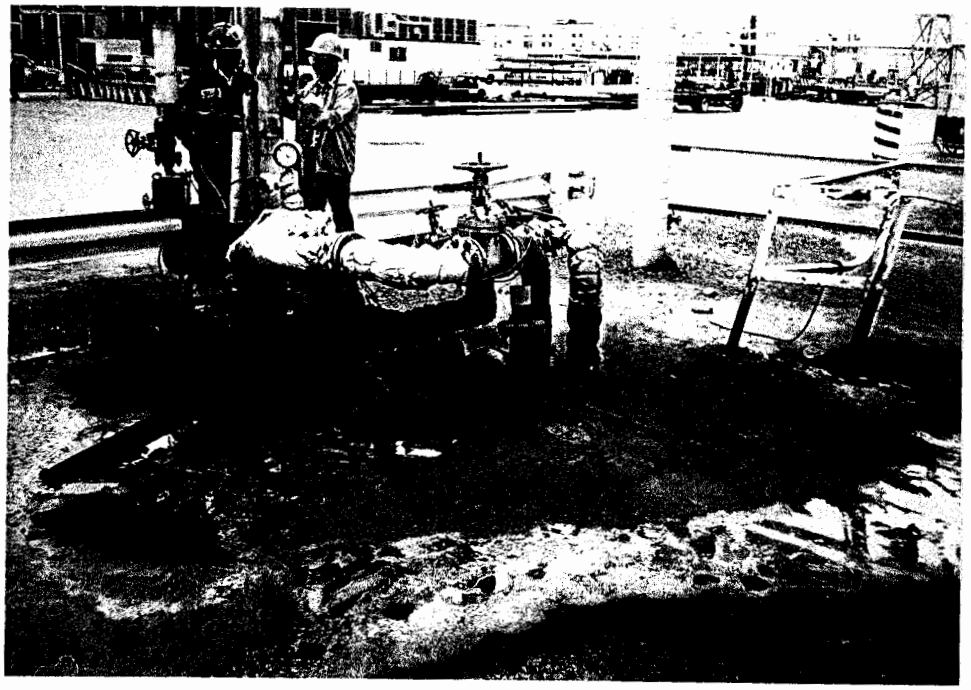
99.5 Rail Car Loading/Unloading Areas and Associated Tracks. Close-up view of a tank car at the loading area to the east of Hewes Avenue. Note the oil saturated conditions of the surrounding ground surface.

100.1 Used Oil Accumulation Areas. View facing southwest of a small slop oil accumulation area at the Ethylene Complex. At the time of the VSI, the drums were empty.

A.1 Stained Refinery Areas. View facing north toward an area of stained soil along a railroad spur to southeast of the Slop Oil Tank 132 (SWMU 59). The metal plates cover a pump and valve system for nearby tanks in the Tank Farm east of 18 Plant.



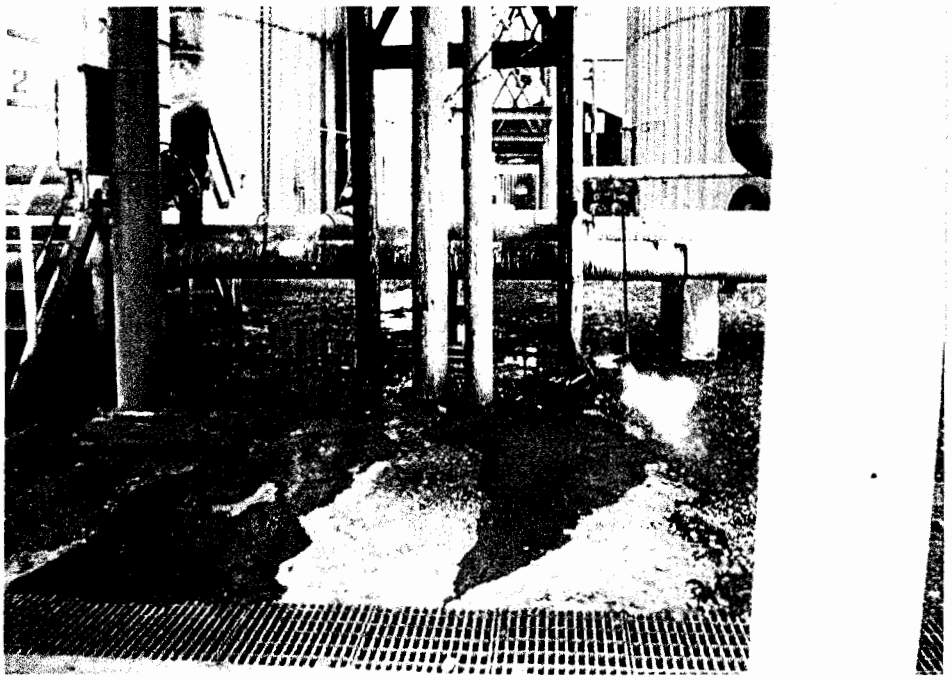
A.2 Stained Refinery Areas. View of north side of Tank No. 32. Note the spillage and the lack of containment for the tank. Spillage may be from valve system.



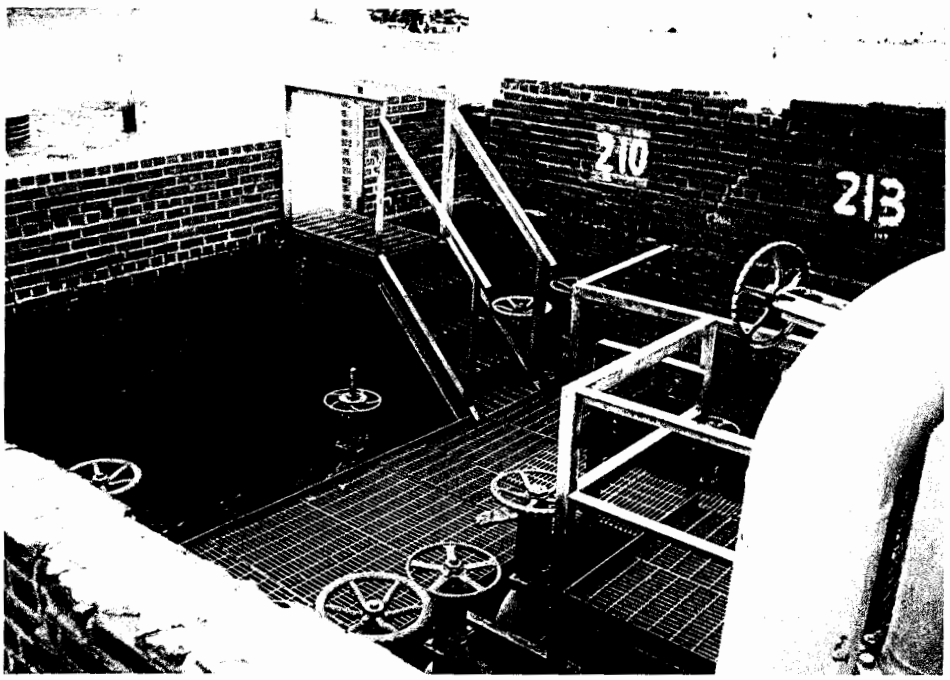
A.3 Stained Refinery Areas. View facing north toward a pump area located to the northwest of the 1F Oil/Water Separator (SWMU 68). Note the heavy spillage and stains in the area.

A.4 Stained Refinery Areas. View facing south toward an area of stained soil that extends from the brick pump house to the sewer drain visible on the far side of the railroad track (SWMU 95). The brick building is the pump house for the 16 Oil/Water Separators (SWMU 84-86), which are visible in the far right corner of the photograph. During the VSI, the stained area (which is not clearly visible in the photograph) appeared to be the result of a spill or overflow near the pump house.

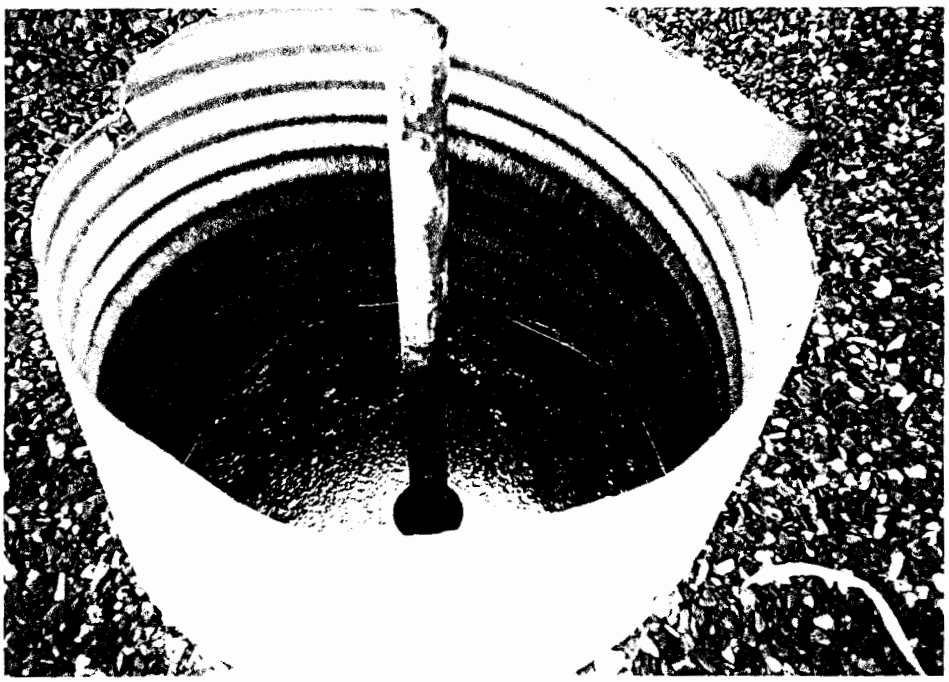
A.5 Stained Refinery Areas. View facing east in 10-4 Plant area shows typical staining seen throughout plant area. Yellow unit to the left is a portable compressor.



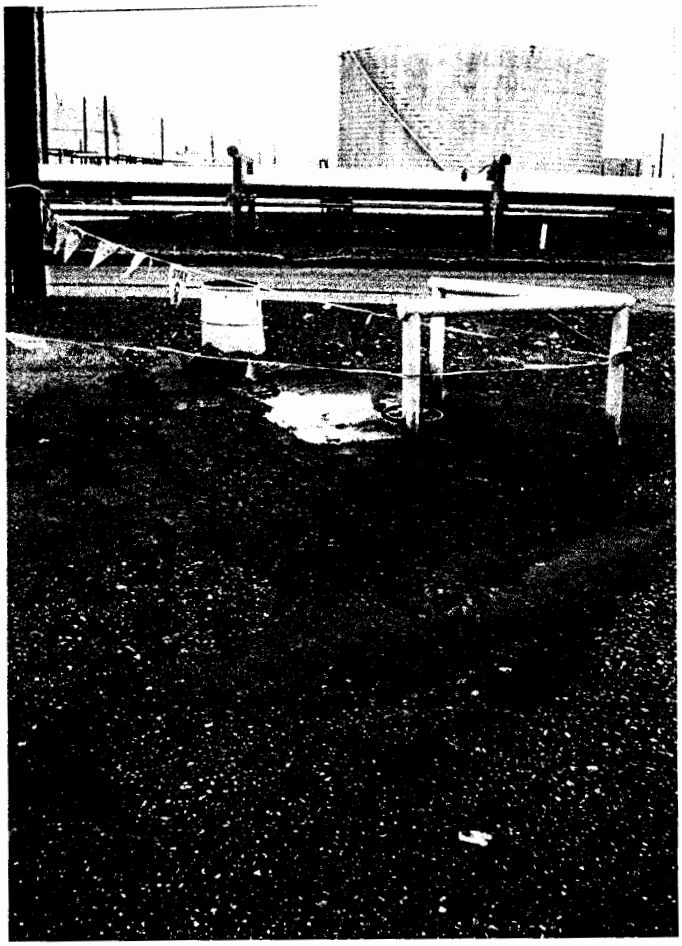
A.6 Stained Refinery Areas. Close-up view of oil saturated area along side of Tank 32 located south of Slop Oil Tank 132 (SWMU 59). Note stains leading to grated drainage area (SWMU 95).



B.1 Underground Transfer Lines. View looking down into a valve pit for transferring product through the underground lines to and from the tanks located in the tank farm which feeds the 1A Oil/Water Separator (SWMU 63). Note the cracks in the wall and staining on the walls which indicates the pit fills up with water and oil.

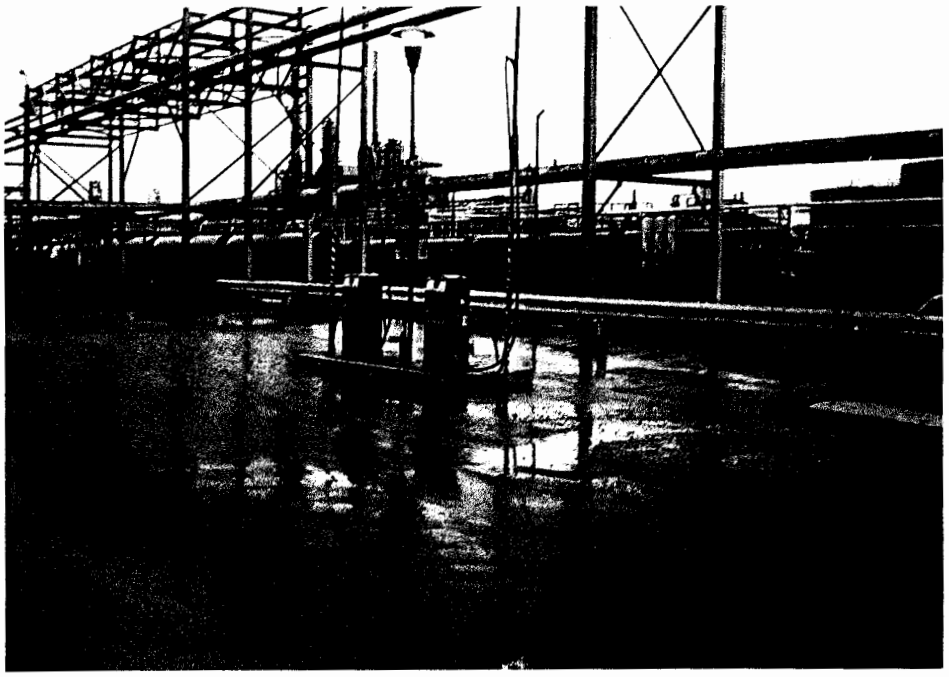


B.2 Underground Transfer Lines. View looking down into a valve box located at the north Tank Farm. Several of these boxes were seen in each of the tank farms at the facility. Note the oily material.

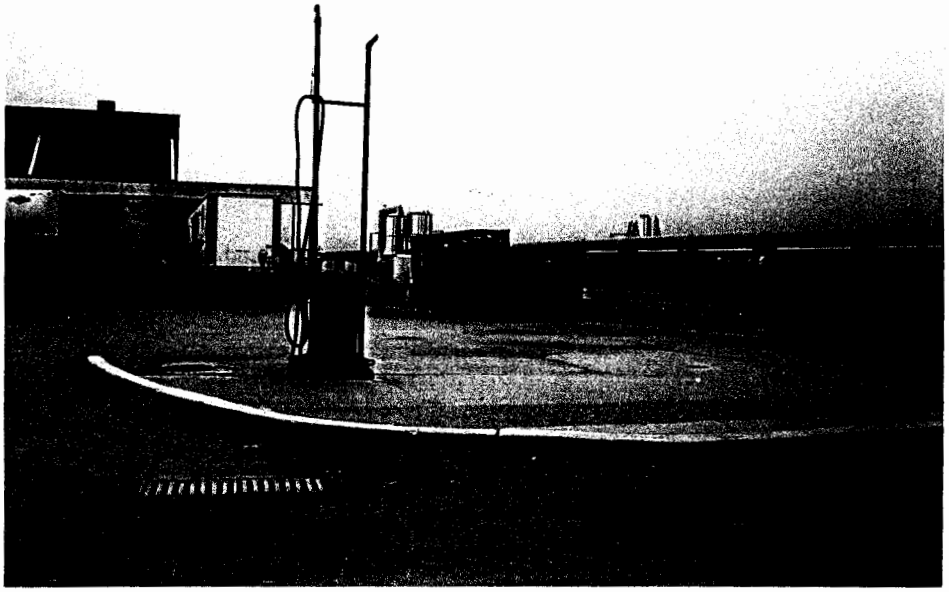


B.3 Underground Transfer Lines. View facing west of a valve for underground pipes in the 10-4 Plant. Heavy staining is typical around most of these valves.

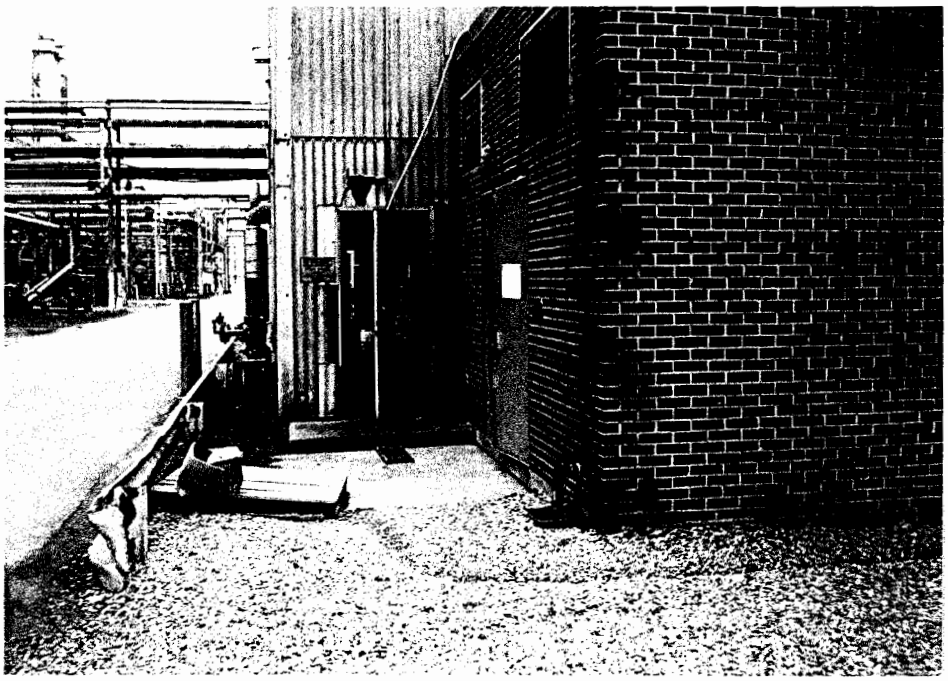
C.0 Underground Storage Tank Excavation Areas. No Photograph.



D.1 Underground Storage Tanks. View facing southeast at the location of two gasoline underground storage tanks south of the Maintenance Garage.

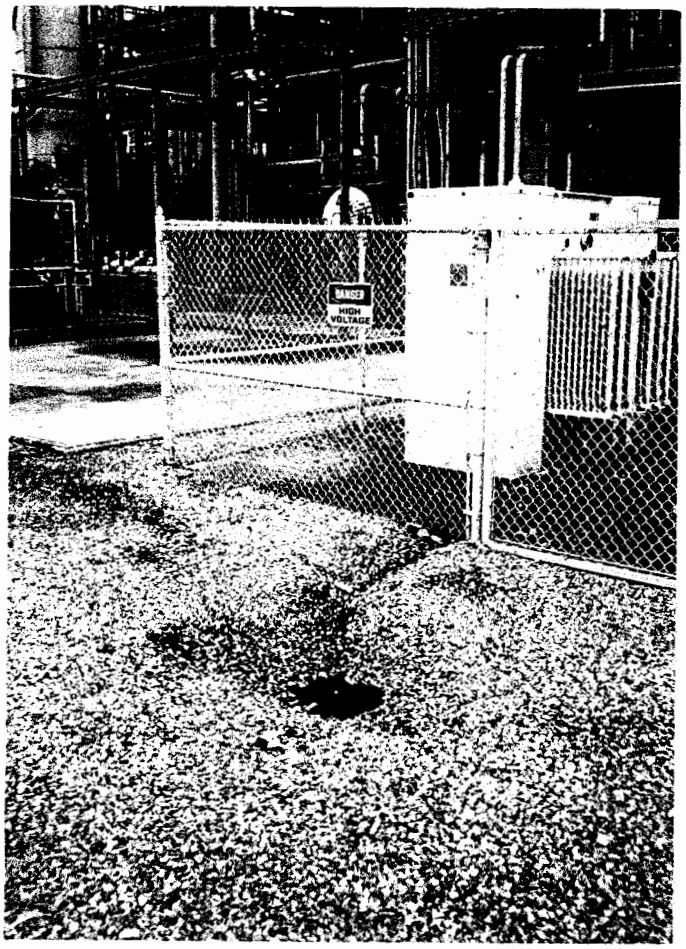


D.2 Underground Storage Tanks. View facing east of the pump for a diesel underground storage tank located at the corner of Blueball Avenue and Second Street.

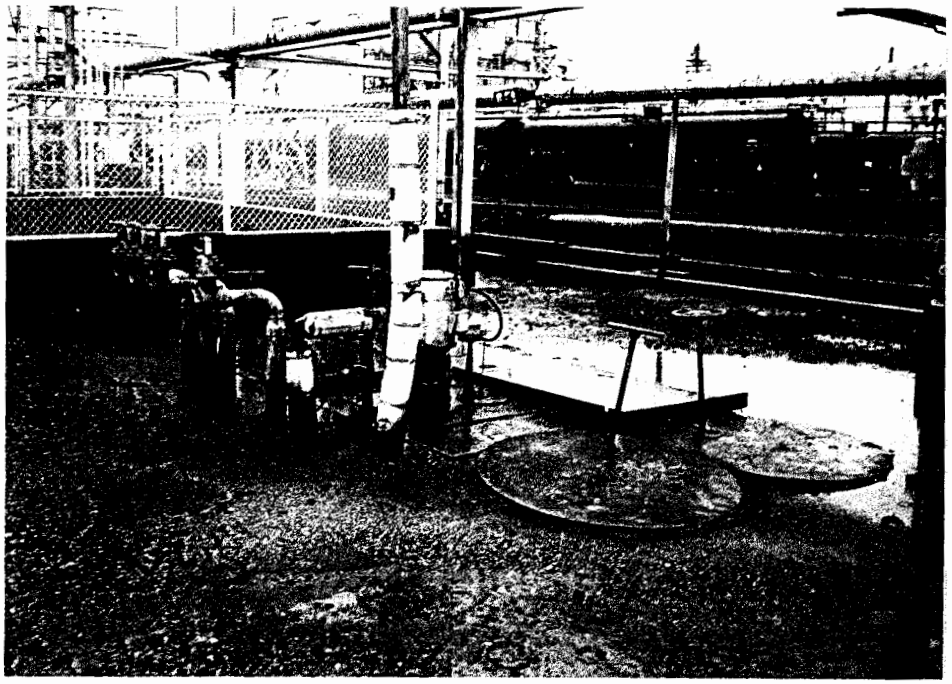


D.3 Underground Storage Tanks. View facing the area of a 500-gallon, kerosene underground storage tank located at the 15 Plant.

E.0 Underground Storage Caverns. No Photograph.



F.1 8-C Plant PCB Transformer Area. View facing southwest toward PCB transformer near 8-C Crude Unit just north of SWMU 42. Note staining leading to storm sewer drain.



G.2 1F Oil/Water Separator Electrical Box. View facing southeast toward the control system for the 1F Oil/Water Separator (SWMU 68). The 1F Oil/Water Separator Feed Trench (SWMU 69) is visible just south of the unit.

H.0 Kerosene Contamination Area. No Photograph.